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005806

November 8, 1989

Meeting Minutes Transmittal/Approval

Unit Managers' Meeting: General Topics

Federal Building, Room G-53, Richland, WA

October 18, 1989

From/
Appvl.

John J. Broderick
John J. Broderick, Unit Manager, DOE-RL

Date: 11-16-89

Appvl.:

Paul J. Day
Paul J. Day, Unit Manager, EPA

Date: 11-17-89

Appvl.:

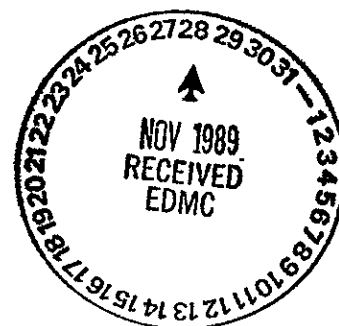
Larry Goldstein
Larry Goldstein, Unit Manager, Washington Department of Ecology

Date: 11/16/89

To: Distribution

The purpose of this meeting was to discuss topics which are common to all operable units, hereafter referred to as "general topics." This format, which begins with the October unit managers meetings, will become a regular part of the monthly unit managers meetings, i.e., each month a discussion of general topics will precede all operable unit specific meetings. The format and documentation of the meeting will be similar to past operable unit meetings in that action items will be numbered and statused at subsequent meetings.

Meeting Minutes are attached. Minutes are comprised of the following:
Attachment #1 - Meeting Summary/Summary of Commitments and Agreements;
Attachment #2 - Agenda for the Meeting; Attachment #3 - Attendance List;
Attachment #4 - Viewgraphs from presentation on Performance Assessment;
Attachment #5 - Viewgraphs from presentation on "background;" Attachment #6
- Viewgraphs from presentation on "data reporting;" Attachment #7 - Viewgraphs
from presentation on "evaluation of existing wells;" and Attachment #8 -
Action Items from Special Topics Meetings.



Distribution:

Paul Day, EPA
Doug Sherwood, EPA
Dave Einan, EPA
George Hofer, EPA
Ward Staubitz, USGS
Frank Packard, USGS
Brian Drost, USGS
Donna Lacombe, PRC
Larry Goldstein, WDOE
Chuck Cline, WDOE
John Broderick, DOE-RL
Bob Stewart, DOE-RL
Margo Anthony, DOE-RL
Mike Thompson, DOE-RL
Jerry Chiaramonte, SWEC/IT
Dave Myers, SWEC/IT
Holly Jo Harrison, SWEC/IT
Vernon Hall, WHC
Jim Patterson, WHC
Jerry Cammann, WHC
Tom Wintczak, WHC
Karl Fecht, WHC
Wayne Johnson, WHC
Jack Sonnichsen, WHC
Rick McCain, WHC
Clair Ross, WHC
Al Law, WHC
Alan Krug, WHC
Marl Lauterbach, WHC
Robert Henckel, WHC
Jim Hoover, WHC
Floyd Hodges, WHC
Larry Hulstrom WHC
George Last, PNL
Ron Smith, PNL
Mark Hanson, PNL
Don Kane, PNL
Bill Wright, Golder
Doug Dennison, ASI

cc:

R.D. Wojtasek, WHC
R.D. Freeberg, DOE-RL
R.D. Izatt, DOE-RL
R.E. Gerton, DOE-RL

ADMINISTRATIVE RECORD [Care of
Susan Wray, WHC]

14-51

Attachment #1

Meeting Summary and Summary of Commitments and Agreements

General Topics Unit Managers Meeting

October 18, 1989, Federal Building, Room G-53

Meeting Summary/Summary of Commitments and Agreements

1. Performance Assessment - A presentation on the status of the WHC/PNL program was given by Jerry Cammann and Jack Sonnichsen of Westinghouse. Jerry Cammann presented the program overview. A copy of his viewgraphs is given in Attachment #4. Jack Sonnichsen's presentation focused on the modeling aspects of performance assessment. A copy of his viewgraphs is included in Attachment #4.

The need and/or appropriateness of 3D modeling was discussed. Full 3D modeling may not be needed for most of the sites which will be investigated. Data needs to support 3D modeling may be significantly greater than data needs to carry out a fully acceptable RI/FS. [Note: 3D modeling has not been included in the baseline budget for any operable unit work plans to date.]

A followup meeting with the regulatory agencies will be scheduled to discuss the details of operable unit specific performance assessment activities.

Action # GT1.1: A special topics meeting will be scheduled to discuss the need for 3D modeling. WHC/PNL are to present existing data which would support this modeling approach. Action: John Broderick

2. Background - A presentation was given by Jim Hoover of WHC on the efforts to characterize background data. A copy of his viewgraphs is given in Attachment #5. The WHC program focuses on soils background but may be expanded to include ground water. WHC is currently preparing a strategy document which discusses methodologies and approaches to use of the data. WHC has developed a sampling and analysis schedule for soils which shows completion in about one year from authorization. A detailed sampling and analysis plan has not yet been developed. [Note: Background sampling and analysis has not been funded for FY 1990.]

Action # GT1.2: WHC is to provide a date to EPA/Ecology for issuance of the strategy document which describes methodologies and data use. Action: Carol Geier, WHC

Action # GT1.3: WHC is to update the status of developing a plan for background programs on both soil and ground water at the next UM meeting in November. Action: Karl Fecht, WHC

Action # GT1.4: WHC will present their approach to collection of background information on ground water at the December UM meeting. Action Karl Fecht, WHC

3. Data quality - Wayne Johnson updated the status on the data quality issue. The strategy document will be finalized by the next UM meeting. The specific plan for changes to work plans will be discussed at the 300-FF-1 UM meeting scheduled for October 19.
4. EII Manual progress - The Environmental Council has approved reissuance of the WHC EII manual (WHC-CM-7-7) as a DOE document. It is estimated that this reissuance will occur in the January/February 1990 timeframe.

Responses to EPA/Ecology comments on the August 15, 1989 issue of the EII Manual were formally transmitted to EPA/Ecology at this UM meeting.

EPA/Ecology has been issued one EII update for review since the August 15 issue.

Revisions to the manual are proceeding satisfactorily.

5. Work plan revisions after approval - A process for change control of work plan revisions needs to be developed and implemented. There are several levels of changes which range from minor (e.g. taking additional samples) to major restructuring of the program. The issue of developing a work plan change process was to be discussed at this meeting. However, the subject was deferred to November since WHC is still working the issue internally. [Note: This was Action Item #11EM1.21 and was transferred to the General Topics Meeting]
6. Definition of target dates - Target dates for RI/FS activities need to be established for this and other operable units. A procedure needs to be developed for controlling changes in target dates documented in the Tri-Party Agreement. [Note: This was part of Action Item 11EM1.18 and was transferred to the General Topics Meeting] No status was reported. Discussion is deferred to the November meeting.

Action # 11EM1.18: Identification of target dates and development of a procedure for TPA change control of target dates will be placed on the agenda for the next project managers meeting. Action for DOE/WHC.

7. Data reporting - Tom Wintczak, WHC led a discussion of issues regarding the reporting of data as required by Section 101 of the Tri-Party Agreement. A copy of his viewgraph is given in Attachment #6.

Agreement: Data will be submitted to the regulatory agencies in the following manner:

- o Data on ground water and soil chemical analyses will be submitted after validation has been completed and without interpretation of results.
- o Certain types of data such as soil gas results, results of geophysical surveys, results of topographical surveys, and water levels would be more appropriately submitted in a usable format, i.e, have undergone some degree of interpretive analysis and plotted on maps, cross sections, etc. Such data will be presented at unit manager meetings. Upon viewing the presentation, the regulatory agencies will decide on a case-by-case basis if a more detailed presentation of the data needs to be prepared. If requested by the regulatory agencies, data sets will be assembled into individual reports for a specific effort (e.g., soil gas results, geophysical testing results). Finally, the individual reports or data sets will be assembled and integrated into the final RI report complete with overall interpretations.

A paragraph will be added to Section 101 of the Tri-Party Agreement to reflect a more flexible approach to submittal of data as reflected by the agreement above. [Note: At the 1100-EM-1 Unit Managers meeting of October 19, Paul Day stated that written input was needed from WHC for revision of Section 101.]

8. Evaluation of existing wells - Karl Fecht, WHC presented WHC's evaluation of existing monitoring wells regarding their suitability for use in the RI/FS and RFI/CMS programs. A copy of his viewgraphs is given in Attachment #7.
9. Integration of 100-BC-1 and 100-BC-5 - WHC had previously proposed that the 100-HR-1/100-HR-3 work plans be used as an example format for writing the 100-BC-1 and 100-BC-5 work plans. WHC was directed to hold off until Ecology submits their comments on the 100-HR-1/HR-3 integration.
10. Other issues - The training and security issues for regulatory personnel and their contractors were not discussed at this meeting but are outstanding issues which need resolution. It was agreed that these would be discussed at the next general topics meeting.
11. In the future, action items from Special Topics Meetings will be statused at the General Topics Unit Managers Meetings. Attachment #8 includes the action items from the four Special Topics Meetings held to date. Current status is also indicated.

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Unit Manager's Meeting Agenda

General Topics

October 18, 1989

9:00 AM - 4:00 PM

RM G-53, Federal Bldg.

Performance Assessment

9:00 - 10:30

Background Information

10:45 - 12:00

Status:

1:00 - 4:00

Action Items

Special Topics Meetings

Progress on EII Manual

Revision of work plans after approval

Definition of Target Dates

Data Reporting

Data Quality

Integration of 100-BC-1 and 100-BC-5

Evaluation of existing wells for use in RCRA and CERCLA activities

Agreements and Commitments:

Unit Managers' Meetings

October 19, 1989

Rm G-53, Federal Building

1100-EM-1 8:30 am

300-FF-1 9:45 am

200-BP-1 11:00 am

100-HR-1 1:00 pm

100-HR-3 1:30 pm

90117760055

Attachment #3

Attendance List
General Topics Unit Managers Meeting
October 18, 1989

Name	Organization	Phone
Paul Day	EPA	509-376-6623
Doug Sherwood	EPA	509-376-9529
Dave Einan	EPA	509-376-3883
George Hofer	EPA	206-442-2803
Ward Staubitz	USGS	206-593-6510
Frank Packard	USGS	503-231-2247
Brian Drost	USGS	206-593-6510
Donna Lacombe	PRC	206-624-2692
Larry Goldstein	WDOE	206-438-7018
Chuck Cline	WDOE	206-438-7556
John Broderick	DOE-RL	509-376-4197
Bob Stewart	DOE-RL	509-376-6192
Margo Anthony	DOE-RL	509-376-8375
Mike Thompson	DOE-RL	509-376-6421
Jerry Chiaramonte	SWEC/IT	509-376-7829
Dave Myers	SWEC/IT	509-376-0969
Holly Jo Harrison	SWEC/IT	509-375-4221
Vernon Hall	WHC	509-376-0286
Jim Patterson	WHC	509-376-0568
Tom Wintczak	WHC	509-376-0902
Karl Fecht	WHC	509-376-0940
Wayne Johnson	WHC	509-376-1721
Jack Sonnichsen	WHC	509-376-9956
Rick McCain	WHC	509-376-0777
Clair Ross	WHC	509-376-2731
Al Law	WHC	509-376-9028
Jerry Cammann	WHC	509-376-8506
Alan Krug	WHC	509-376-5634
Marl Lauterbach	WHC	509-376-5257
Robert Henckel	WHC	509-376-2091
Jim Hoover	WHC	509-376-9674
Floyd Hodges	WHC	509-376-4627
Larry Hulstrom	WHC	509-376-4034
George Last	PNL	509-376-8527
Ron Smith	PNL	509-376-5831
Mark Hanson	PNL	509-375-6812
Don Kane	PNL	509-375-2333
Bill Wright	Golder	206-883-0777
Doug Dennison	ASI	509-946-7112

90117760059

Presentation: Performance Assessment Overview

J. W. Cammann
J. C. Sonnichsen

Date Published
October 1989

To be presented at
200-BP-1 Unit
Manager's Meeting
Federal Building,
Richland, Washington
October 18, 1989

Prepared for the U.S. Department of Energy
Assistant Secretary for Defense Programs



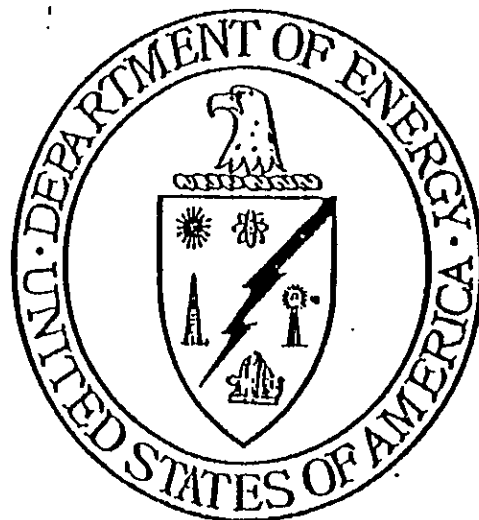
Westinghouse
Hanford Company

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Richland, Washington 99352

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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Performance Assessment Overview

J. W. Cammann
Westinghouse Hanford Company



Westinghouse
Hanford Company

Environmental Technology Group

PRESENTATION OUTLINE

- **Background - information requested**
- **Hanford resources supporting PA - historical perspective**
 - Hanford Site performance assessment program
 - barrier development program
 - historical data generated at Hanford
- **PA's role in the RI/FS process at Hanford**
- **PA activities currently supporting RI/FS at Hanford**
 - computer code evaluation/selection
 - 1100-EM-1 baseline risk assessment
 - 200-BP-1 baseline risk assessment
- **Planned PA and related activities that support the RI/FS process at Hanford**

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BACKGROUND

- Letter from EPA to DOE-RL
 - PA program providing information to support site characterization/risk assessments per work plans
 - Information provided through:
 - * characterization of soil hydraulic properties
 - * development/calibration of computer models
 - * characterization of background groundwater quality
 - outside scope of individual work plans due to
 - * broad scope
 - * complexity
 - * generic application to all OU's
 - PA program information considered integral part of RI/FS
 - information acceptable to regulators/timely availability

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BACKGROUND (cont.)

- **Special topics session requested**
 - review PA program activities applicable to RI/FS
 - soil hydraulic properties
 - overview of model development/calibration
 - schedule for completion of activities

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PRESENTATION OUTLINE

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HANFORD RESOURCES SUPPORTING PA

(Hanford Site Performance Assessment Program)

BACKGROUND

- **HDW-EIS: bounding analysis to determine future work scope**
- **Lack of data necessitated simplistic approach**
 - **streamtube: vadose (vertical), aquifer (horizontal)**
 - **linear distribution coefficients: neglects spatial variability**
 - **unit hydraulic gradient: neglects lateral spreading**
- **Though conservative, numerous comments received regarding simplistic approach**
 - **low accuracy, resolution, order-of-magnitude**
 - **detailed models/supporting data provide greater accuracy, resolution (spatial variations, irregular geometries)**
- **Hanford site performance assessment program initiated**

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HANFORD RESOURCES SUPPORTING PA **(Hanford Site Performance Assessment Program)**

- **Hanford site performance assessment program emphasis**
 - contaminant release and transport data
 - near surface water balance data
 - flux of meteoric water to the unconfined aquifer
 - vadose zone flow and transport data/models
- **Hanford site performance assessment program expectations**
 - Increased confidence in simulation results for baseline analyses
 - better definition of uncertainties in evaluations of alternative site remediation actions
 - better tools to support risk-based decision making

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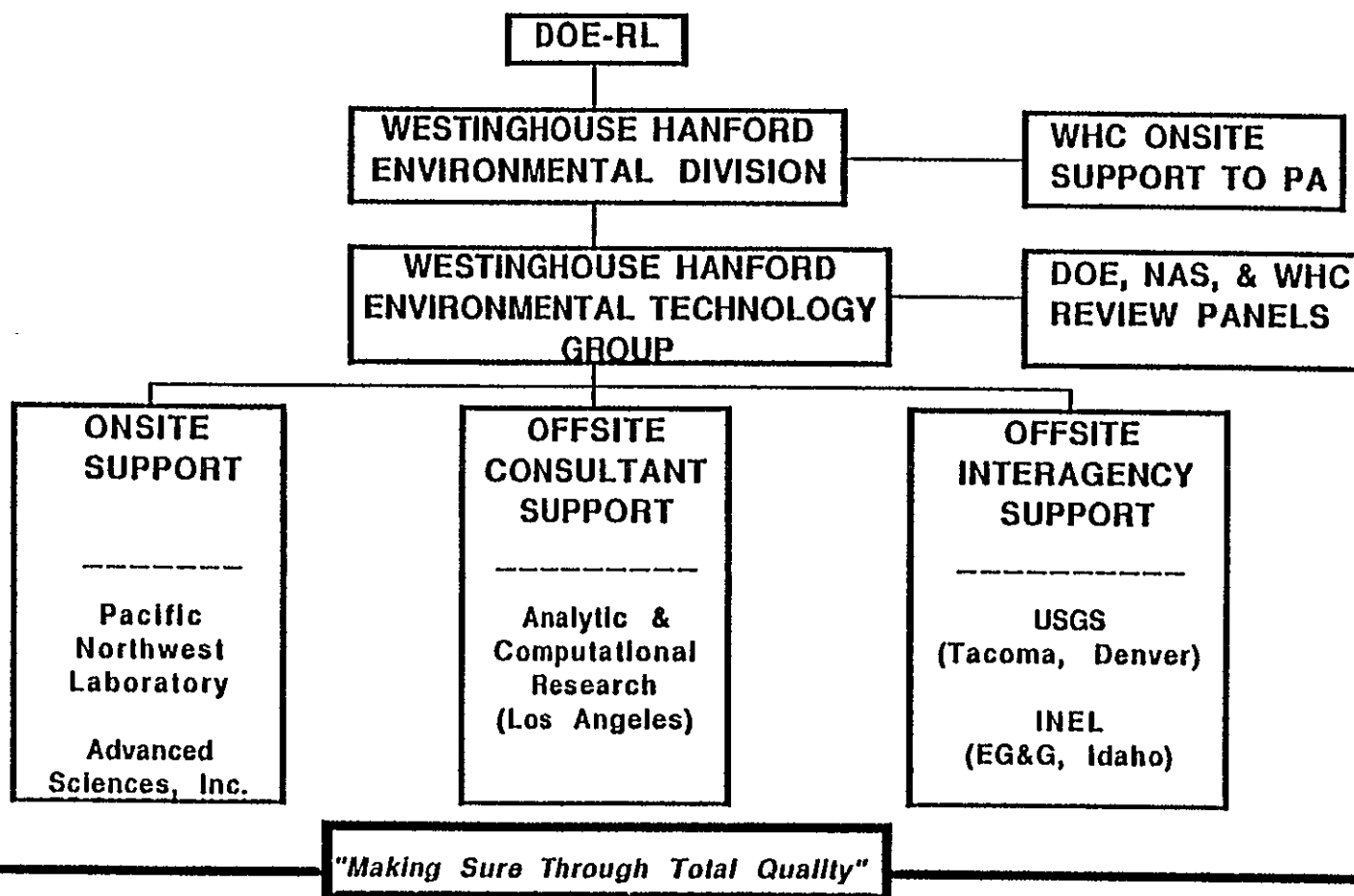


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HANFORD SITE PERFORMANCE ASSESSMENT PROGRAM

Project Organization

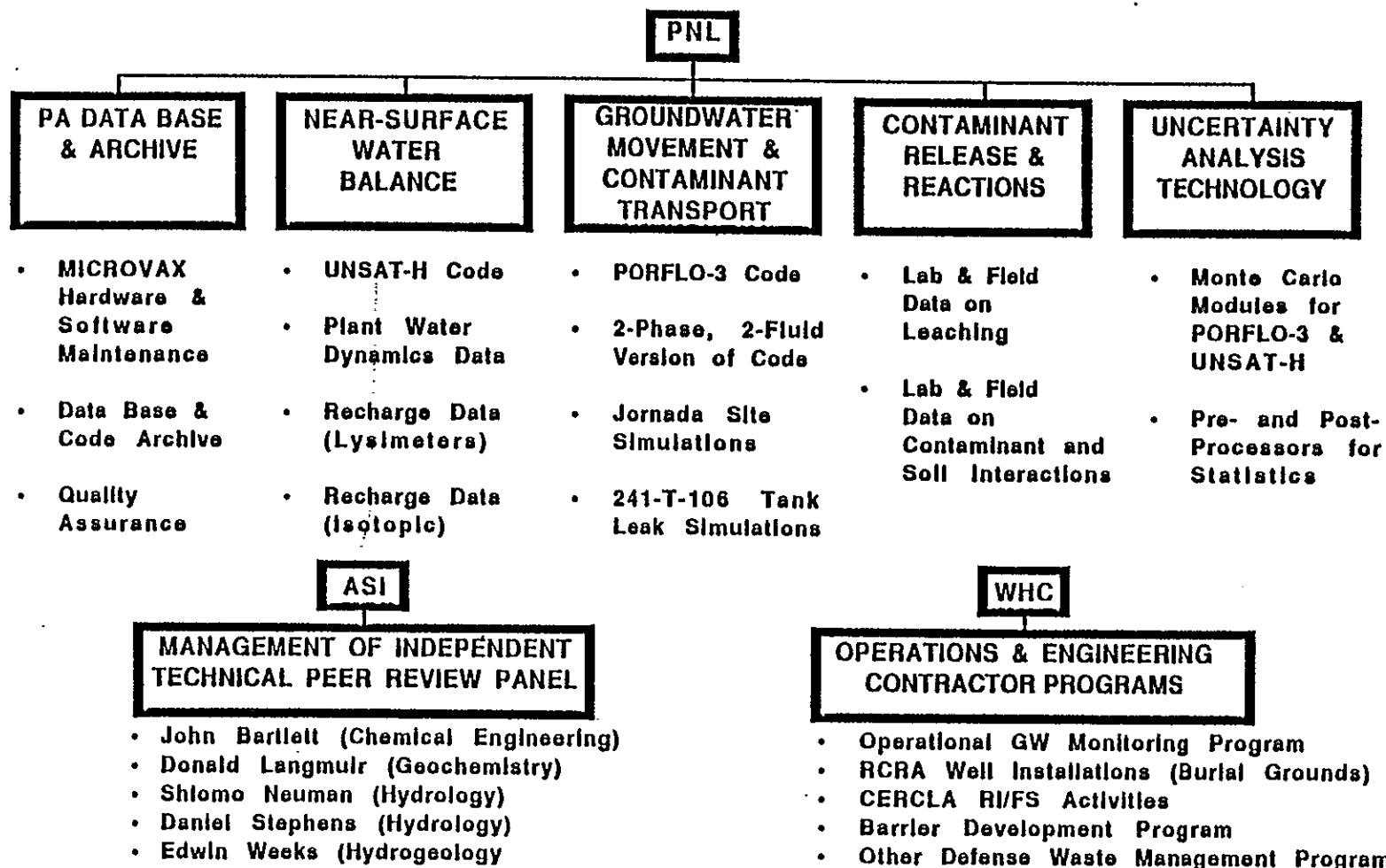




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HANFORD SITE PERFORMANCE ASSESSMENT PROGRAM ONSITE SUPPORT



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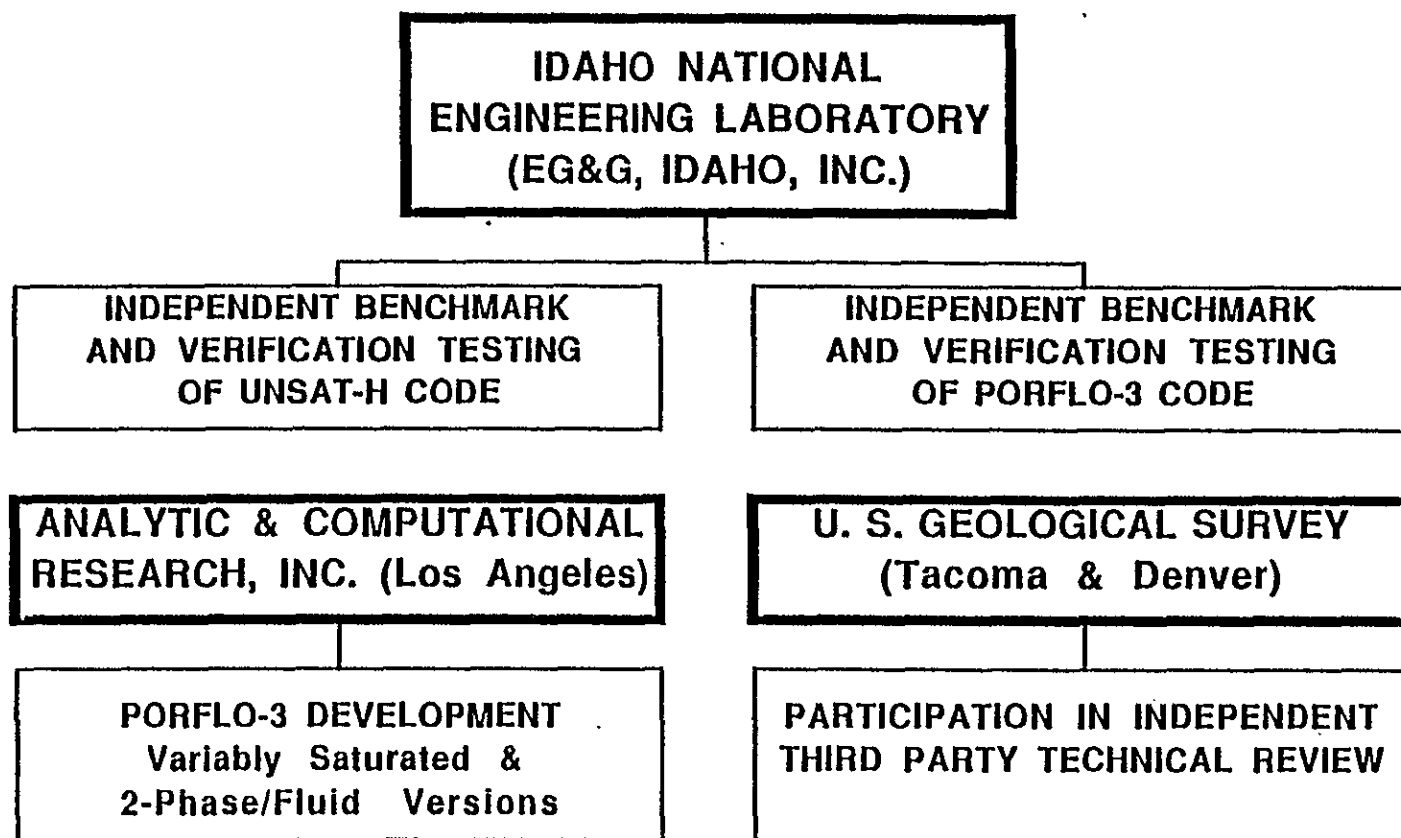


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HANFORD SITE PERFORMANCE ASSESSMENT PROGRAM

OFFSITE SUPPORT



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HANFORD RESOURCES SUPPORTING PA

(Barrier Development Program)

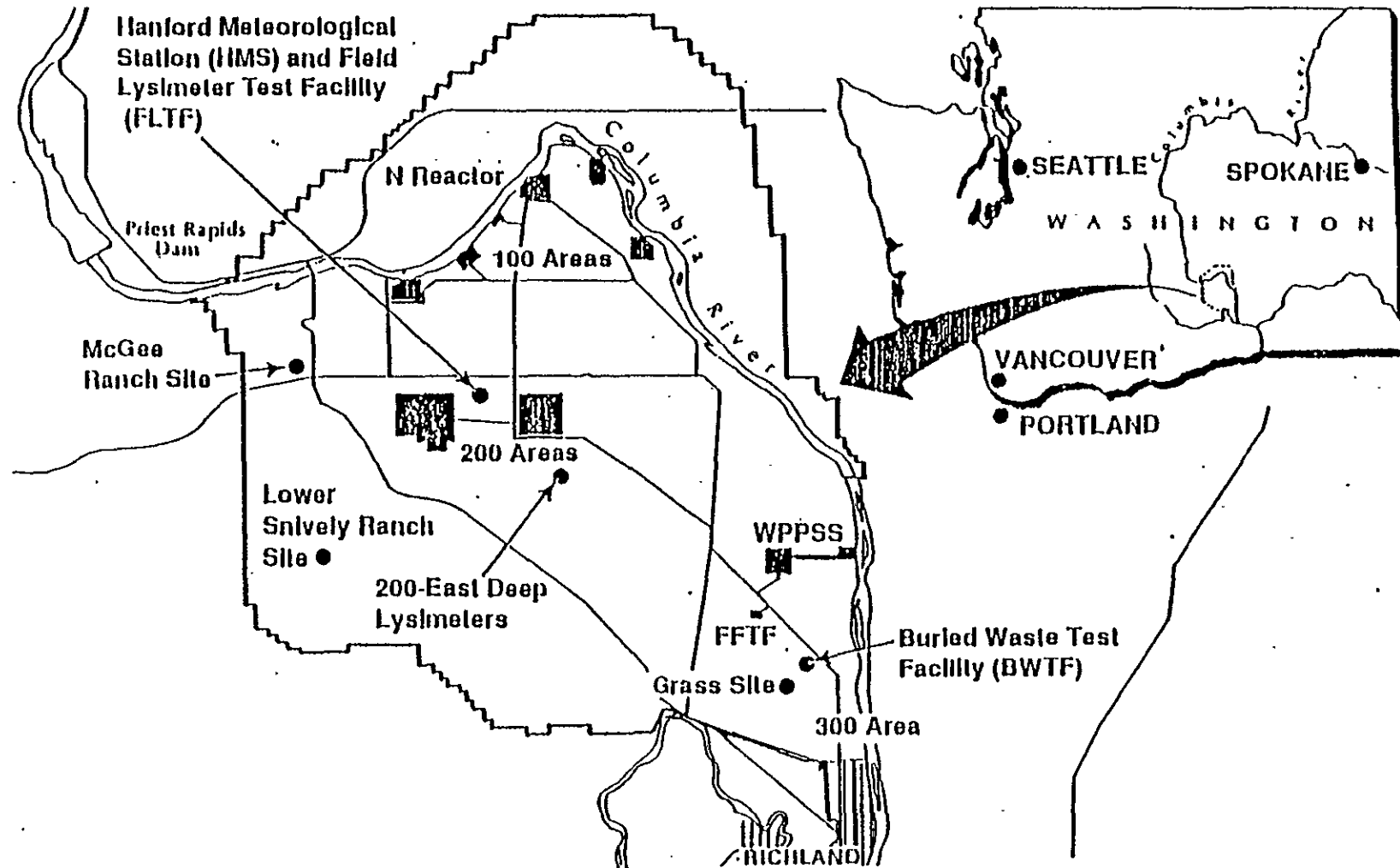
- **Barrier development program underway at Hanford**
 - provide long-term enhancements of RCRA cap design
 - provide alternative for consideration under "containment" option during feasibility studies
- **Long-term climate change assessment**
 - limited Hanford meteorological record (April 1912)
 - paleoclimate reconstruction & future climate predictions
- **Field lysimeter test facility constructed**
 - contain barrier materials of known quantity & characteristics
 - precise method for measuring drainage & evapotranspiration
 - data being used to calibrate/validate UNSAT-H computer code

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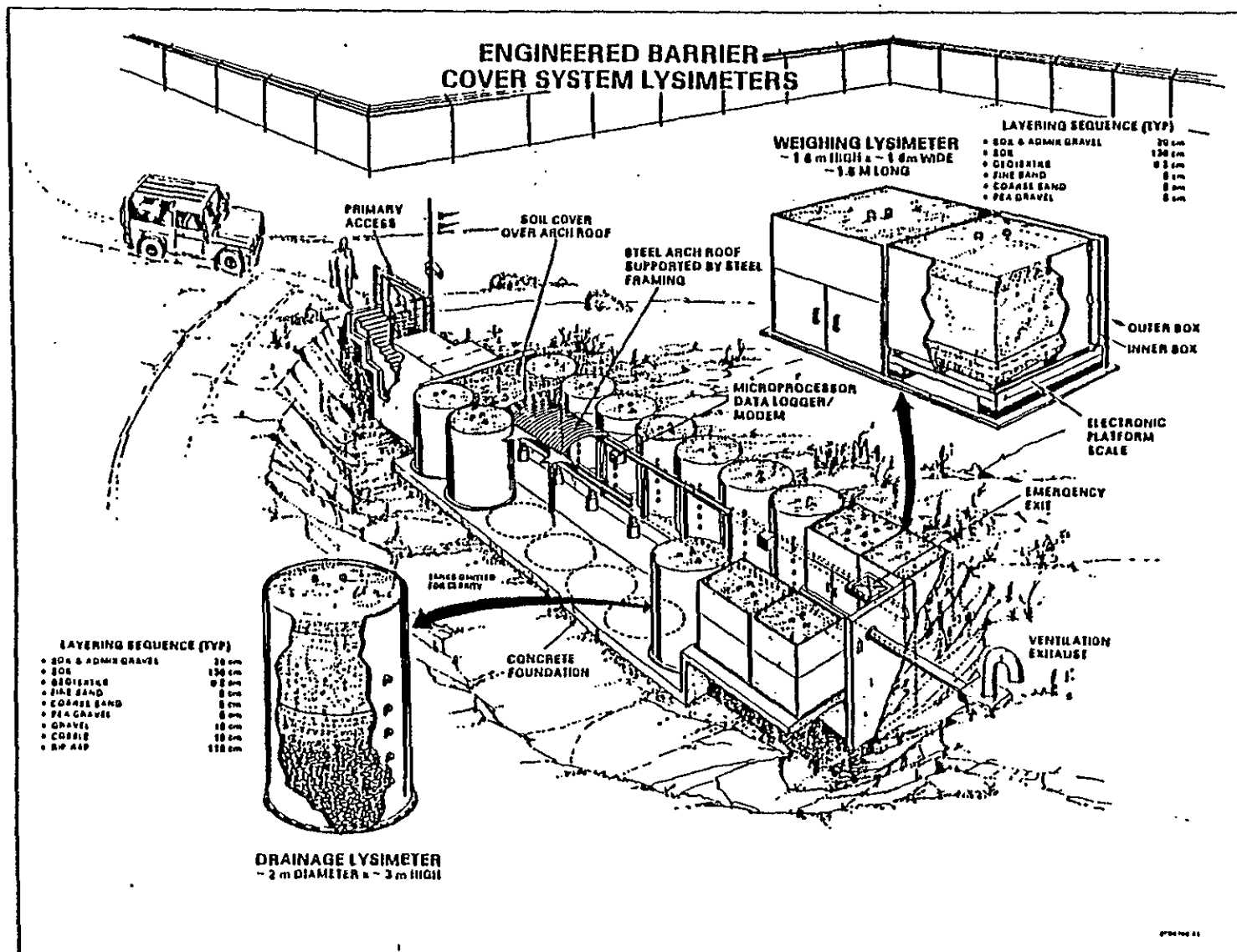


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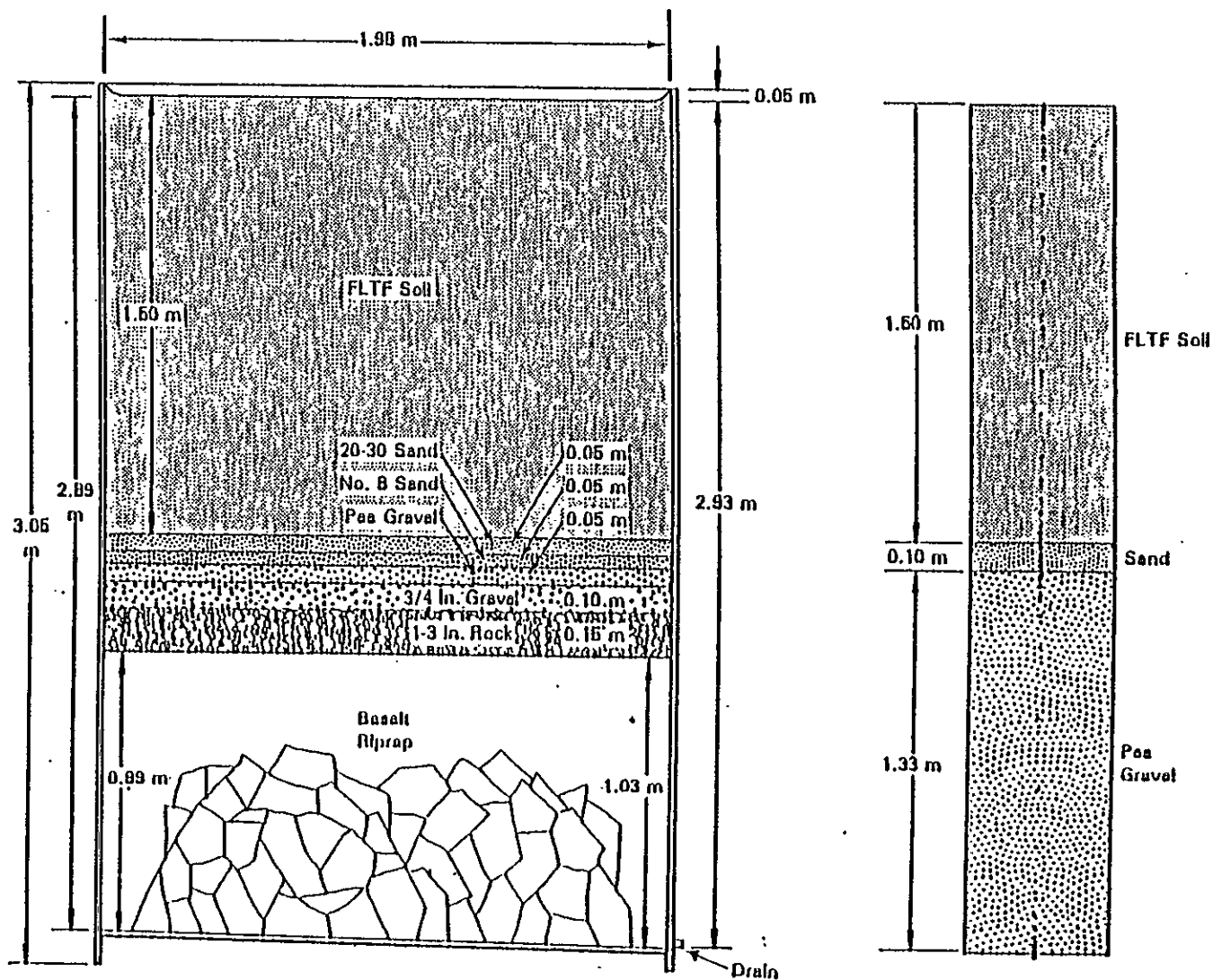
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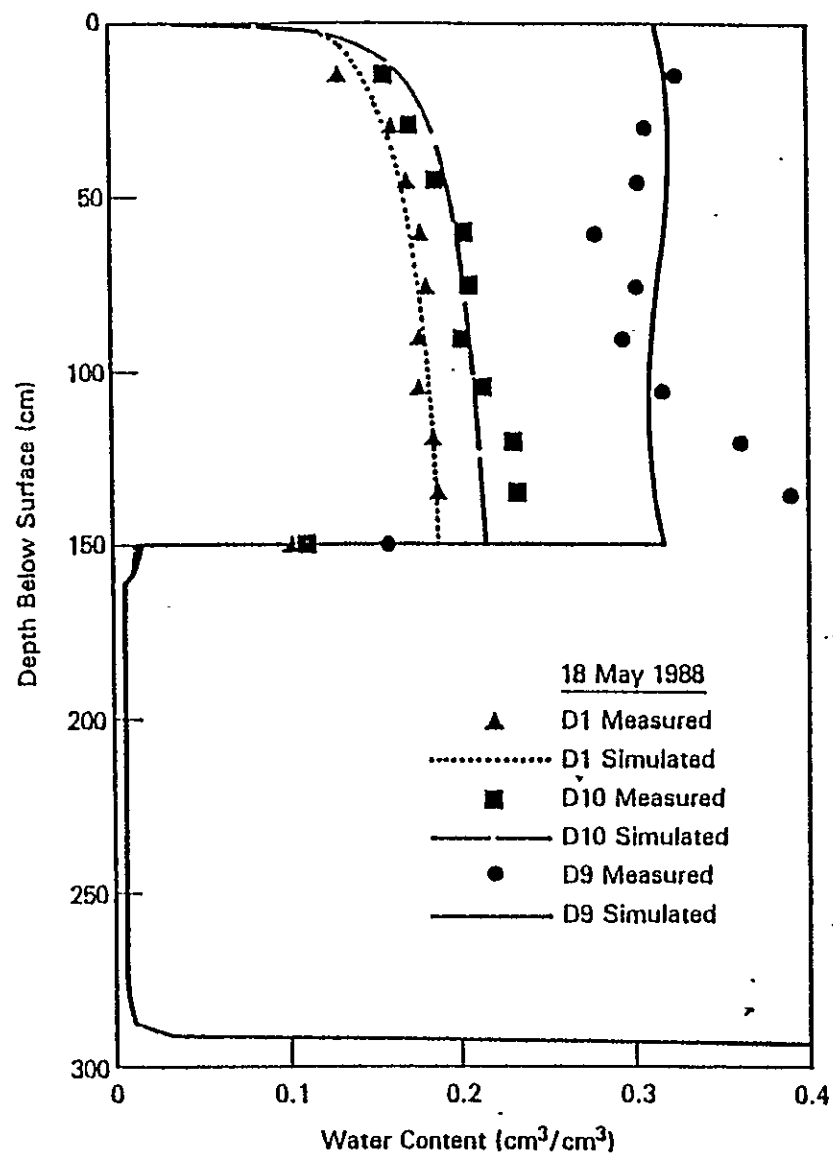


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HANFORD RESOURCES SUPPORTING PA

(Historical Data Gathered At Hanford)

- Over 40 years of data, varying levels of effort and quality
- Geologic data
 - well logs
 - particle size (ROCSAN data base)
 - moisture content, calcium carbonate
 - soil physical properties (porosity, bulk density)
- Hydrologic/contamination data
 - water table maps
 - surface/groundwater quality (BWIP hydrochemical data base)
 - groundwater contamination (Hanford groundwater data base)
 - geophysical logs
 - moisture characteristic curves
 - aquifer tests
 - limited tank leak and liquid disposal facility characterization
- Meteorological data (HMS, since April, 1912)

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HANFORD RESOURCES SUPPORTING PA

(Historical Data Gathered At Hanford, cont.)

- **Vadose zone flow models**
 - moisture characteristics data available from several programs
 - data sufficient for simple modeling
 - detailed modeling will require site specific estimates and investigation of spatial variability

- **Groundwater flow models**
 - hydraulic conductivity/transmissivity available from several aquifer tests
 - bulk density and porosity data base available
 - data sufficient for simple modeling
 - additional aquifer tests needed to evaluate anisotropy and delayed response
 - enhanced geophysical logging capability available for use within one year

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HANFORD RESOURCES SUPPORTING PA

(Historical Data Gathered At Hanford, cont.)

- **Transport models in vadose zone and groundwater**
 - distribution coefficients available for some radionuclides (lab experiments, saturated conditions, synthetic solutions)
 - data in open literature for some chemical constituents
 - existing information sufficient for limited simple modeling
 - work needed to estimate distribution coefficients for vadose zone (unsaturated conditions)
 - additional work needed to determine effects of radioactivity on organic complexants (breakdown, increase retardation)
- **Available data of limited utility; additional data needed and will be collected**
- **Efforts underway to prioritize data needs, identify funding sources, and schedule work**

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PRESENTATION OUTLINE

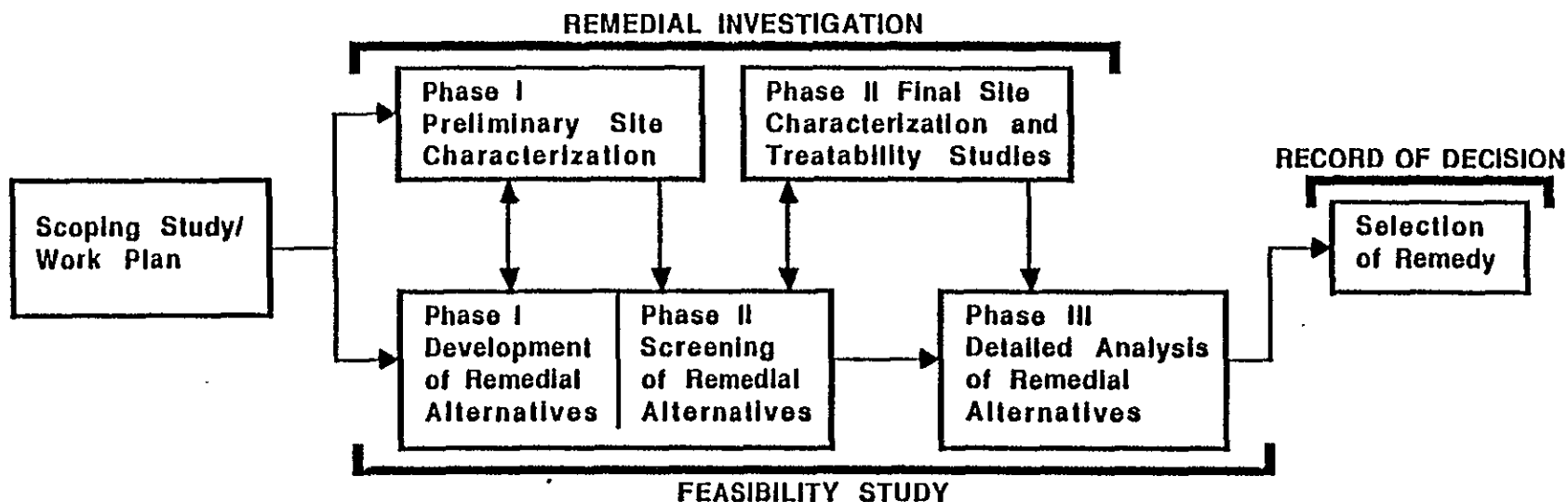
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PA's ROLE IN THE RI/FS PROCESS



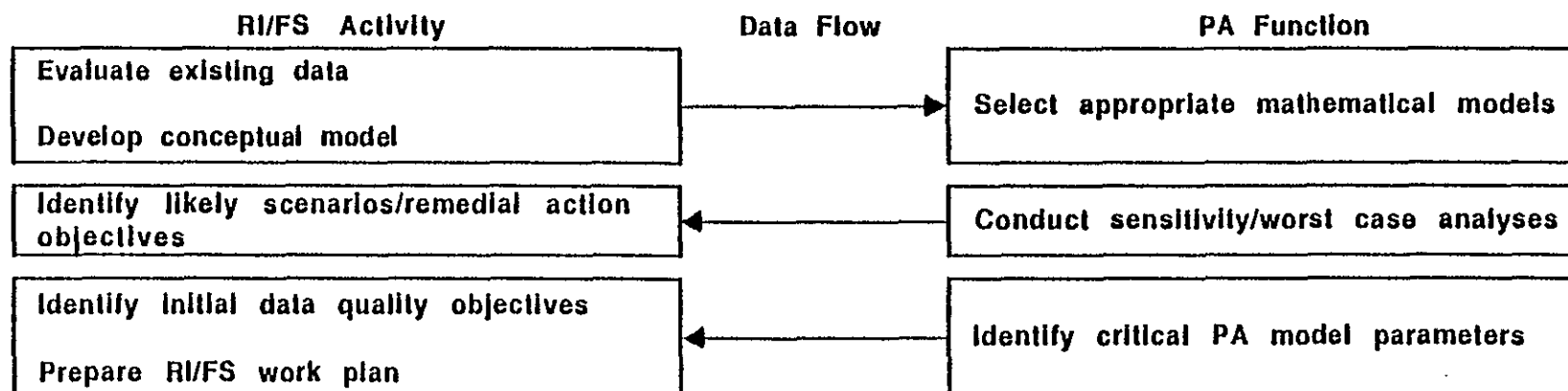
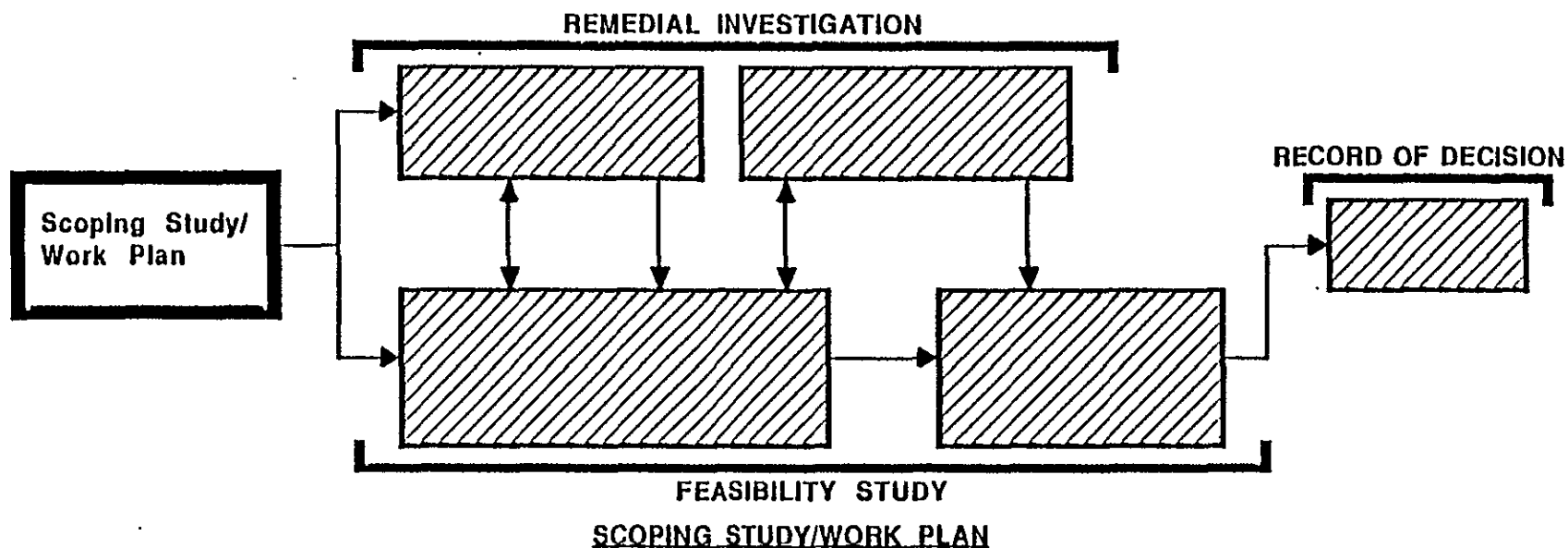
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PA's ROLE IN THE RI/FS PROCESS



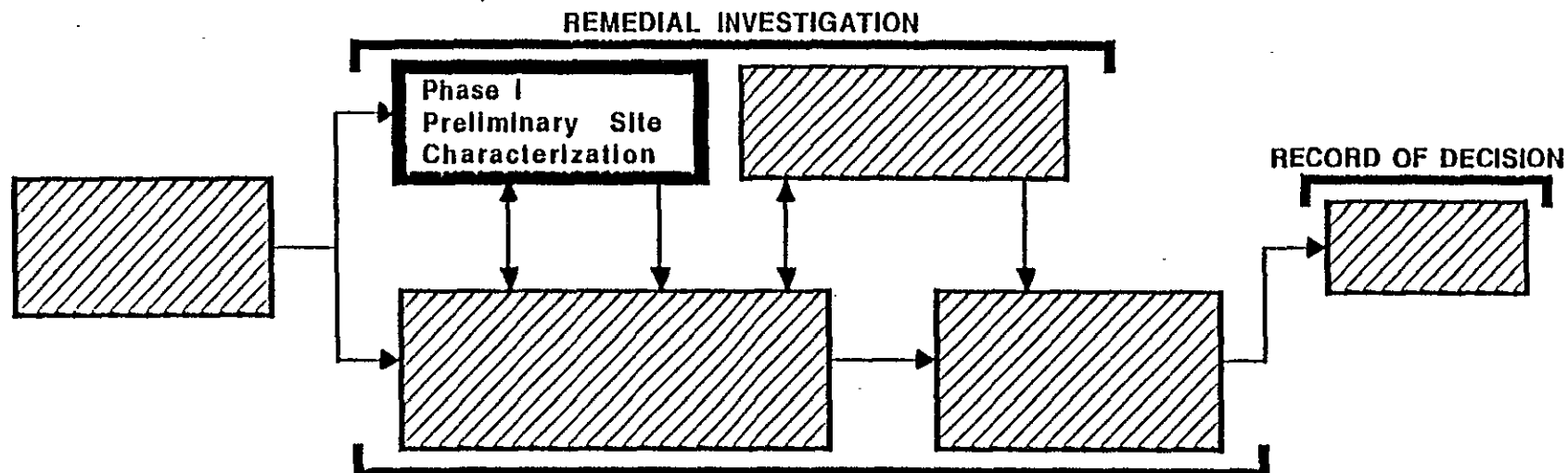
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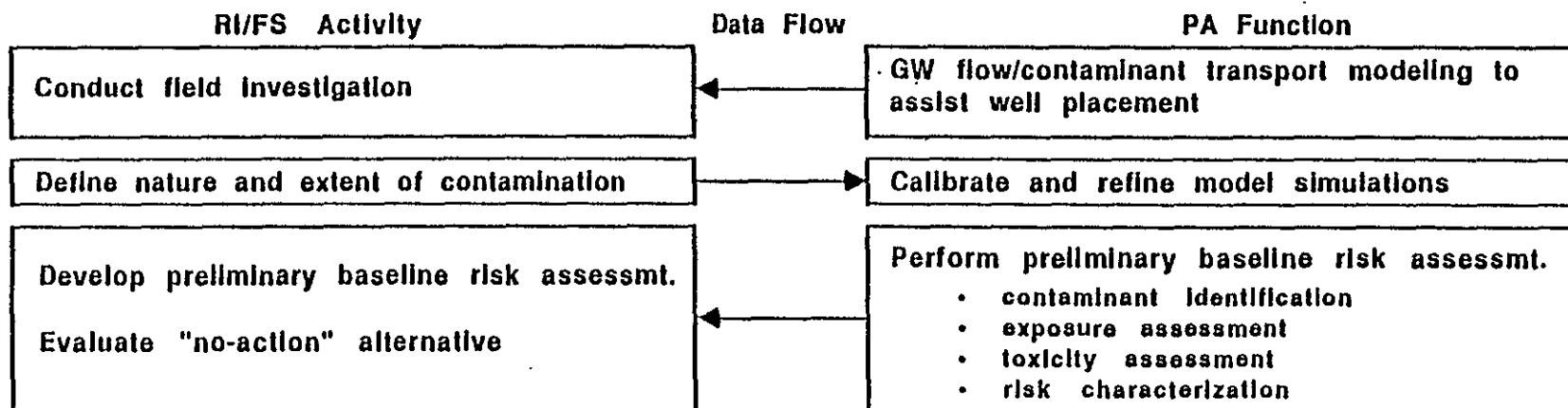
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PA's ROLE IN THE RI/FS PROCESS



FEASIBILITY STUDY PRELIMINARY SITE CHARACTERIZATION



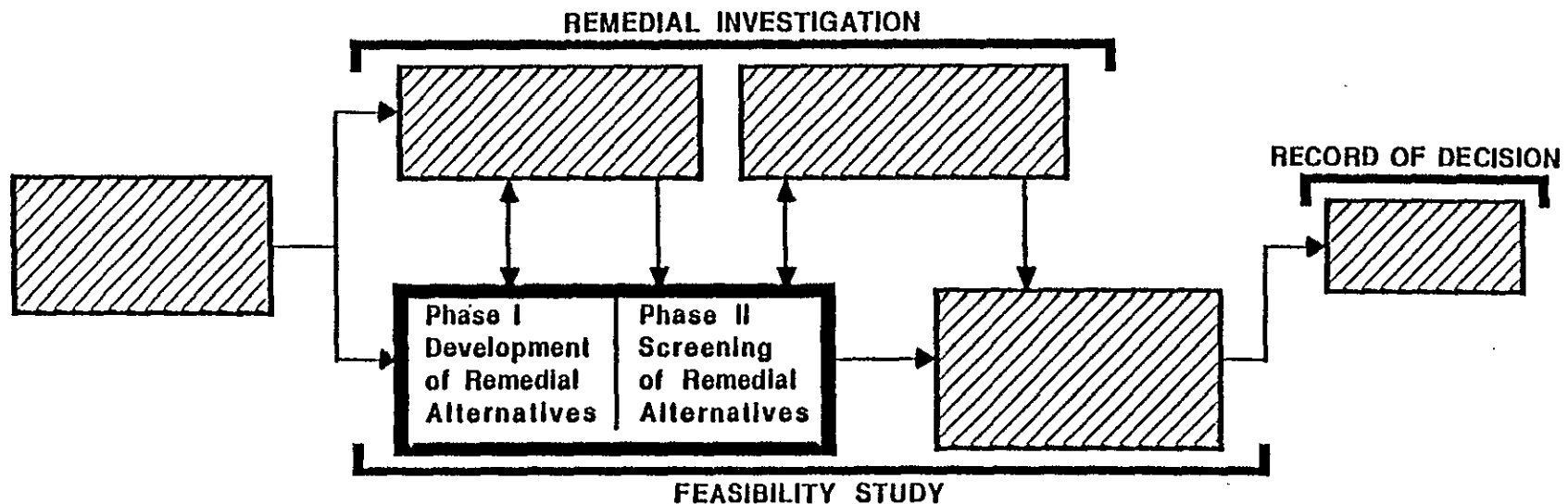
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PA's ROLE IN THE RI/FS PROCESS



DEVELOPMENT AND SCREENING OF ALTERNATIVES

RI/FS Activity

Data Flow

PA Function

Identify/screen treatment technologies
Assemble technologies into alternatives
Screen alternatives, as necessary

Select appropriate PA models to evaluate
remedial action alternatives and estimate
uncertainties

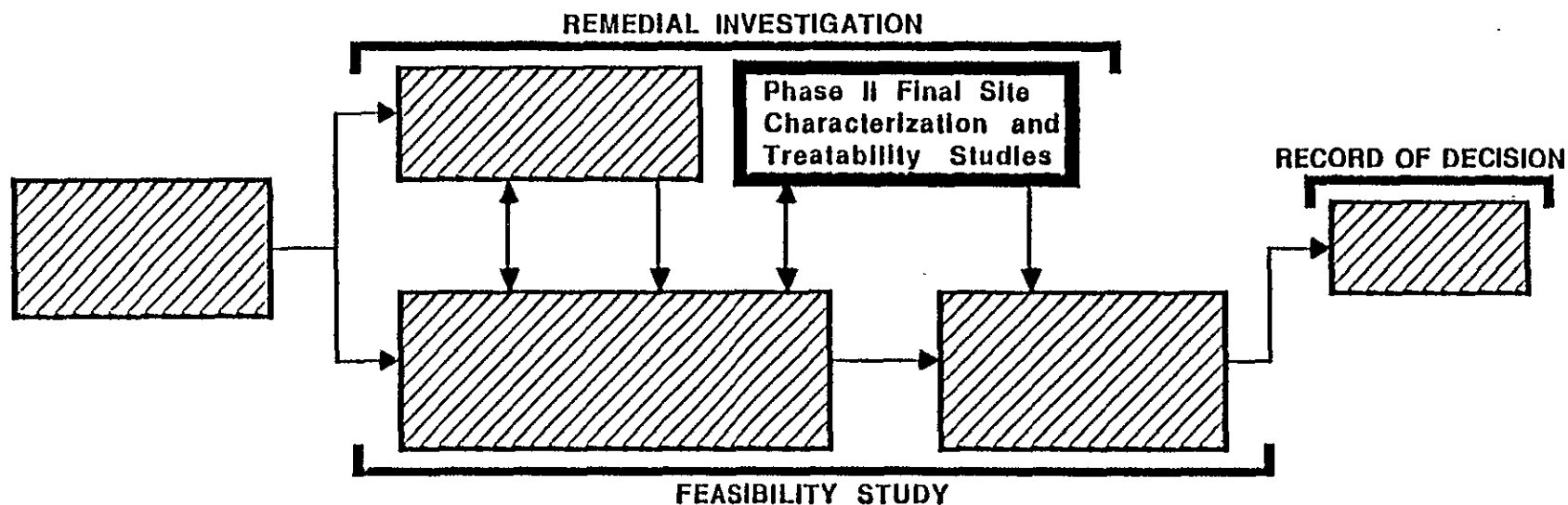
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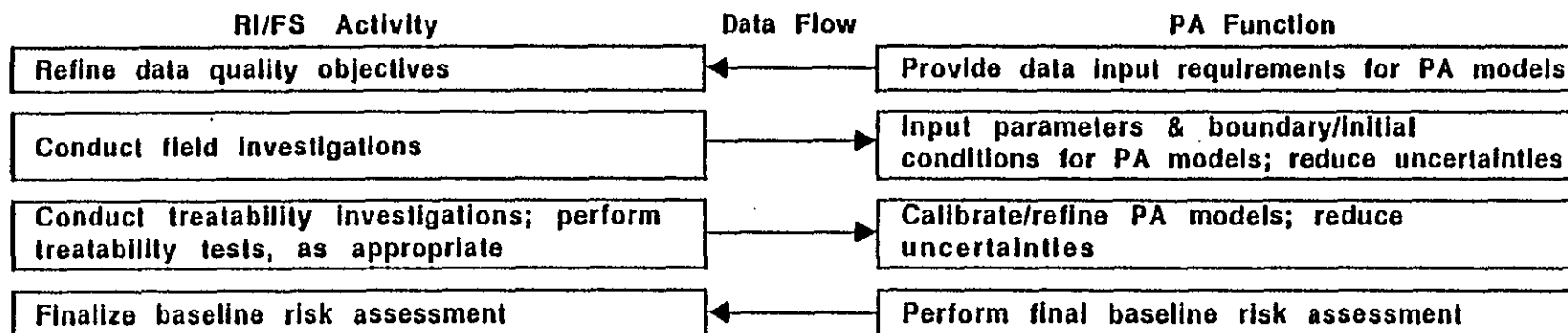
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PA's ROLE IN THE RI/FS PROCESS



FINAL SITE CHARACTERIZATION AND TREATABILITY STUDIES



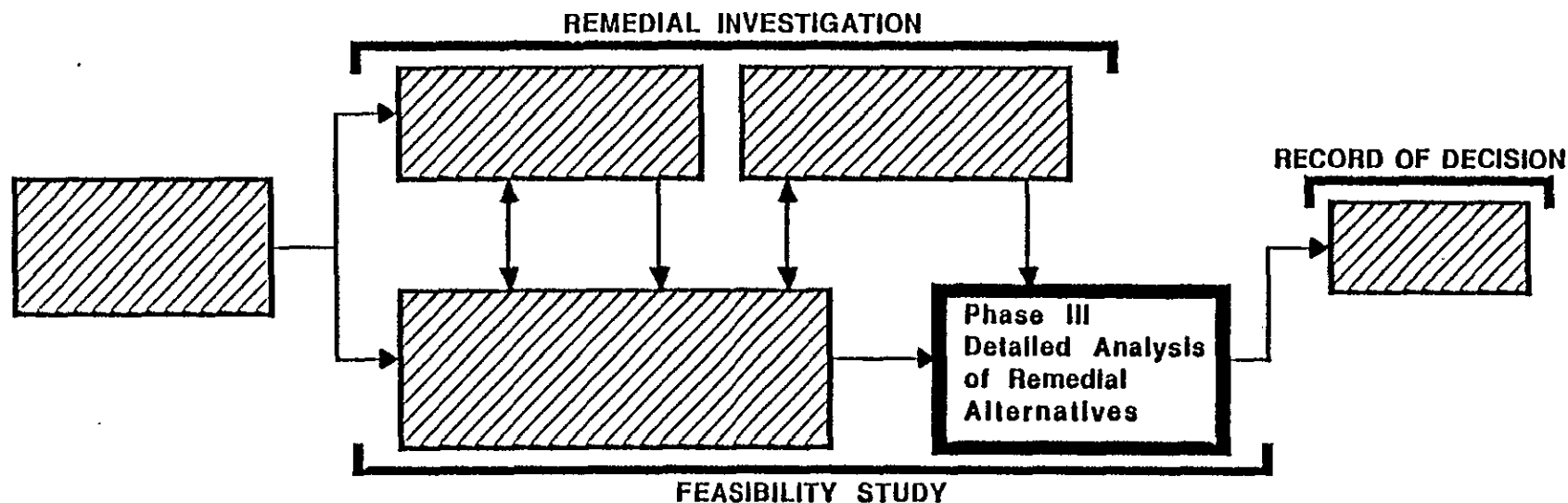
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PA's ROLE IN THE RI/FS PROCESS



DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

RI/FS Activity

Further define alternatives, as necessary

Analyze alternatives against the 9 evaluation criteria specified in CERCLA RI/FS guidance

Compare alternatives against each other

Data Flow



PA Function

Modeling of remedial action alternatives

Supports:

- remedy selection
- record of decision
- remedial action design

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PRESENTATION OUTLINE

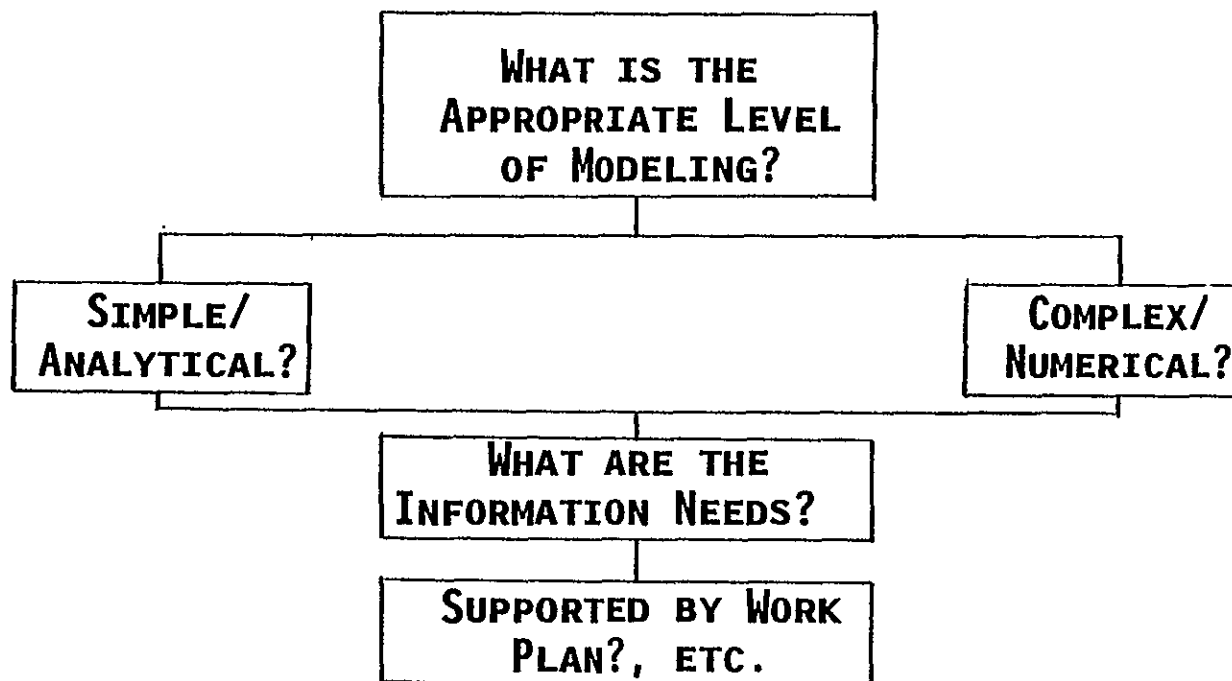
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OUTLINE

- O COMPUTER CODE SELECTION**
- O STATUS OF PERFORMANCE ASSESSMENT SUPPORT**
 - 1100 AREA (1100-EM-1)**
 - 200 AREA (200-BP-1)**

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MODEL SELECTION



APPROPRIATE LEVEL OF MODELING?

- 0 WHAT PATHWAYS NEED TO BE EVALUATED?**
- 0 HOW MUCH INFORMATION IS AVAILABLE?**
- 0 HOW COMPLEX IS THE GEOMETRY?**
- 0 ARE THERE ANY SIGNIFICANT INTERACTIONS WITH OTHER OPERATIONS?**
- 0 IS LEVEL OF MODELING CONSISTENT WITH ANTICIPATED REMEDIAL ACTIONS?**
- 0 HOW ACCURATE AND PRECISE DO THE ANALYSIS NEED TO BE?**

APPROACH

- 0 WHC PLANS TO CONDUCT A SITE SPECIFIC EXPOSURE OR HEALTH RISK ASSESSMENT IN SUPPORT OF CLOSING EACH CERCLA UNIT AND IN SUPPORT OF OPERATING AND/OR CLOSING EACH RCRA UNIT**
- 0 THE SCOPE OF EACH ASSESSMENT WILL VARY AND WILL BE TAILORED TO THE SPECIFIC NEEDS OF THE UNIT**

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MODEL SELECTION PROCESS

- 0 USE EXISTING PATHWAY MODELS**
 - RADIOACTIVE WASTES**
 - HAZARDOUS CHEMICAL WASTES**
- 0 SELECT APPROPRIATE FLOW AND TRANSPORT MODELS TO AUGMENT PATHWAY MODELS**

**DESIRED FEATURES IN FLOW
AND TRANSPORT CODES**

- 0 OFF-THE-SHELF WITH MINIMAL DEVELOPMENT REQUIRED**
- 0 ABILITY TO MODEL MULTI-DIMENSIONAL FLOW AND TRANSPORT**
- 0 ABILITY TO MODEL AN INTEGRATED (SATURATED-UNSATURATED)
UNCONFINED AQUIFER SYSTEM WITH SOURCES/SINKS**

**DESIRED FEATURES IN FLOW
AND TRANSPORT CODES (CONT'D.)**

- 0 ABILITY TO MODEL DRY HANFORD CONDITIONS**
- 0 ABILITY TO MODEL HETEROGENEOUS, HANFORD SOIL CHARACTERISTICS**
- 0 ACCEPTANCE BY TECHNICAL COMMUNITY IN GROUNDWATER INDUSTRY (E.G.,
PUBLISHED IN REFERRED JOURNALS)**
- 0 ACCEPTANCE BY REGULATORY AGENCIES**

**DESIRED FEATURES IN FLOW
AND TRANSPORT CODES (CONT'D.)**

- 0 AVAILABILITY OF DOCUMENTATION**
- 0 AVAILABILITY OF TECHNICAL SUPPORT**
- 0 LOW COST**

CODES SELECTED FOR FLOW AND TRANSPORT MODELING

- o VAM2D**
- o PORFLO**
- o UNSAT H**

VAM2D

- 0 TWO-DIMENSIONAL, FINITE-ELEMENT MODEL FOR SINGLE PHASE FLOW AND TRANSPORT
- 0 INTEGRATED SATURATED-UNSATURATED FLOW DOMAIN
- 0 USERS GUIDE AVAILABLE
- 0 VERIFICATION AND BENCHMARKING RESULTS PUBLISHED IN WATER RESOURCES RESEARCH
- 0 MODEL CALIBRATION STUDIES IN PROGRESS USING T-106 DATA
- 0 APPLIED TO PROBLEMS FOR THE NRC (LOS ALAMOS WORKSHOP), DOE (NEVADA TEST SITE, SAVANNAH RIVER) AND EPRI (PNL)

PORFLO

- 0 THREE-DIMENSIONAL, FINITE-DIFFERENCE MODEL FOR FLOW, HEAT AND MASS TRANSPORT**
- 0 INTEGRATED SATURATED-UNSATURATED FLOW DOMAIN**
- 0 USERS GUIDE AVAILABLE**
- 0 VERIFICATION AND BENCHMARKING TESTS IN PROGRESS**
- 0 MODEL CALIBRATION STUDIES IN PROGRESS USING T-106 DATA**

UNSAT H

- 0 ONE-DIMENSIONAL, FINITE-DIFFERENCE MODEL TO SIMULATE FLOW THROUGH VADOSE ZONE ONLY
- 0 USERS GUIDE AVAILABLE
- 0 VERIFICATION AND BENCHMARKING TESTS IN PROGRESS
- 0 INCLUDES A FOR NEAR-SURFACE WATER BALANCE
- 0 VALIDATION TESTS IN PROGRESS USING LYSIMETER DATA

SUMMARY

- 0 REDUCED NUMBER OF FLOW AND TRANSPORT MODELS TO THREE (3)
PRIMARY FOCUS ON QUALIFICATION AND USE OF THESE MODELS**
- 0 LISTING OF MODELS THAT WHC WILL CONSIDER AVAILABLE FOR USE
IS PROVIDED IN WORK PLANS**

EXAMPLES

TWO SITES (OPERABLE UNITS) ASSIGNED HIGH PRIORITY

- o 1100-EM-1 LIQUID WASTE DISPOSAL SITES**
- o 200-BP-1 SEPARATIONS PROCESS WATER DISPOSAL SITES**

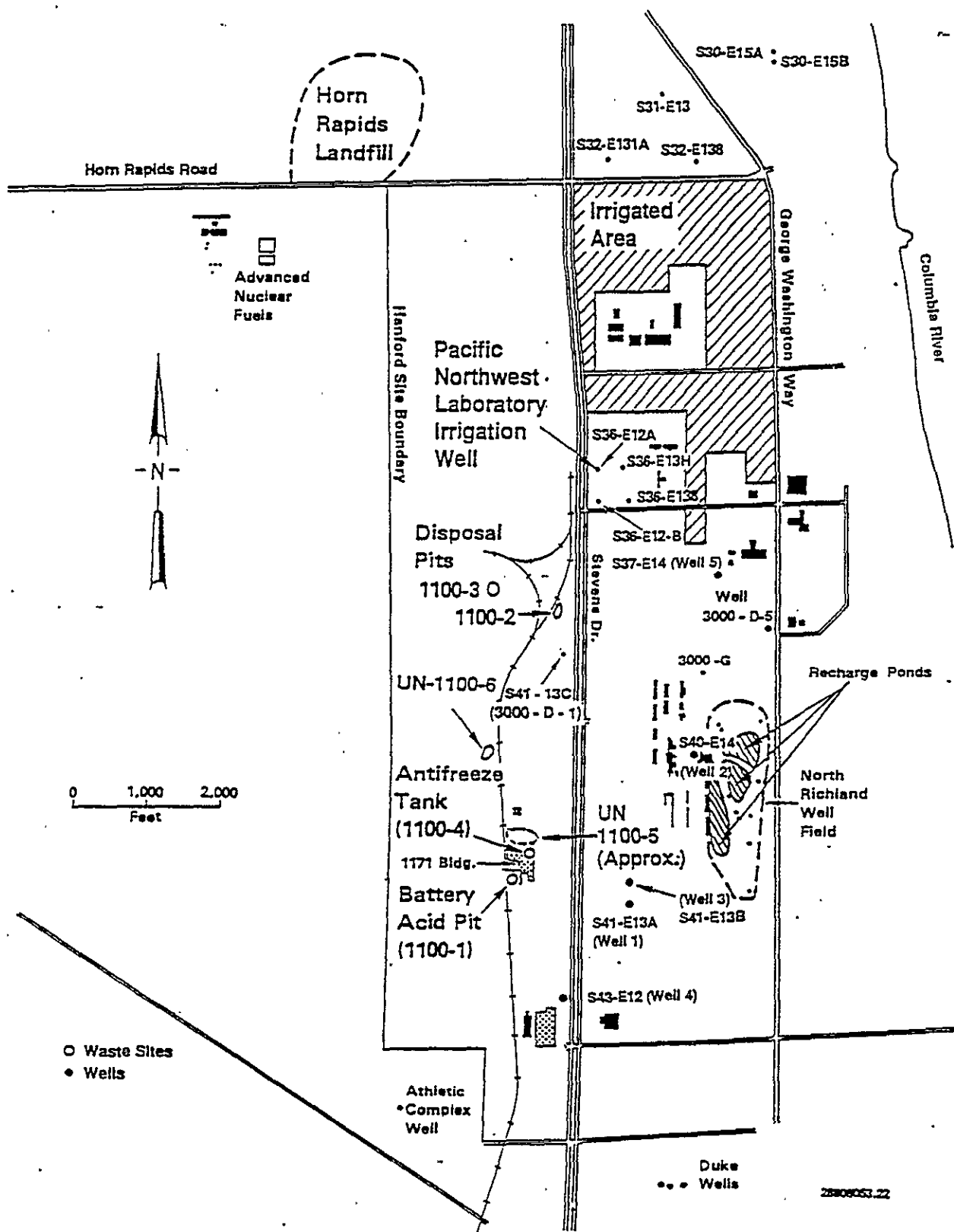
1100-EM-1**LOCATED IN THE 1100 AREA**

- 0 SEVEN WASTE SITES**
- 0 IMPACT OF WASTE SITES ON GROUNDWATER IS UNKNOWN**
- 0 CONCERN: PROXIMITY TO NORTH RICHLAND WELL FIELD**

WASTE SITES IN THE 1100-EM-1 OPERABLE UNIT

- o 1100-1 BATTERY ACID PIT
- o 1100-2 PAINT AND SOLVENT PIT
- o 1100-3 ANTIFREEZE AND DEGREASER PIT
- o 1100-4 ANTIFREEZE STORAGE PIT
- o UPR 1100-5 RADIATION CONTAMINATION SITE
- o UPR 1100-6 DISCOLORED SOIL SITE
- o --- HORN RAPIDS LANDFILL

0010311106



PRELIMINARY ANALYSIS: 1100-EM-1 WASTE SITES

- 0 TRAVEL TIME THROUGH VADOSE ZONE**
- 0 FLOW PATHS IN UNCONFINED AQUIFER**

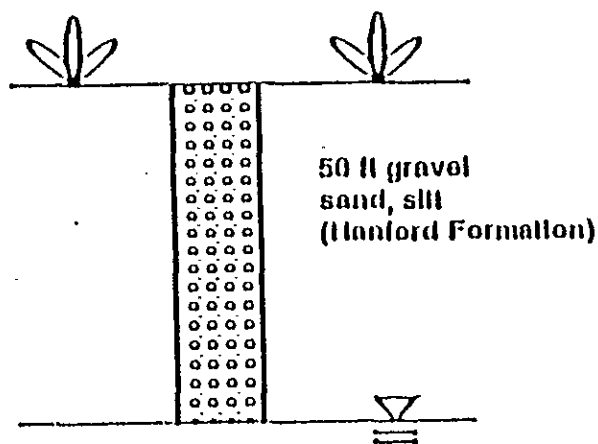


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MOISTURE MOVEMENT IN THE UNSATURATED ZONE

- Unit Gradient Model
- van Genuchten-Mualem Formulation for Hydraulic Conductivity vs. Moisture Content (PNL, 1988)



Recharge

16 cm/yr

5 cm/yr

.5 cm/yr

Travel Time

30 years

80 years

600 years

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FLOW PATHS IN UNCONFINED

- 0 WITHOUT OPERATION OF NORTH RICHLAND WELL FIELD**
- 0 WITH OPERATION OF NORTH RICHLAND WELL FIELD**
- 0 MODELS USED: VTT, MODFLOW**

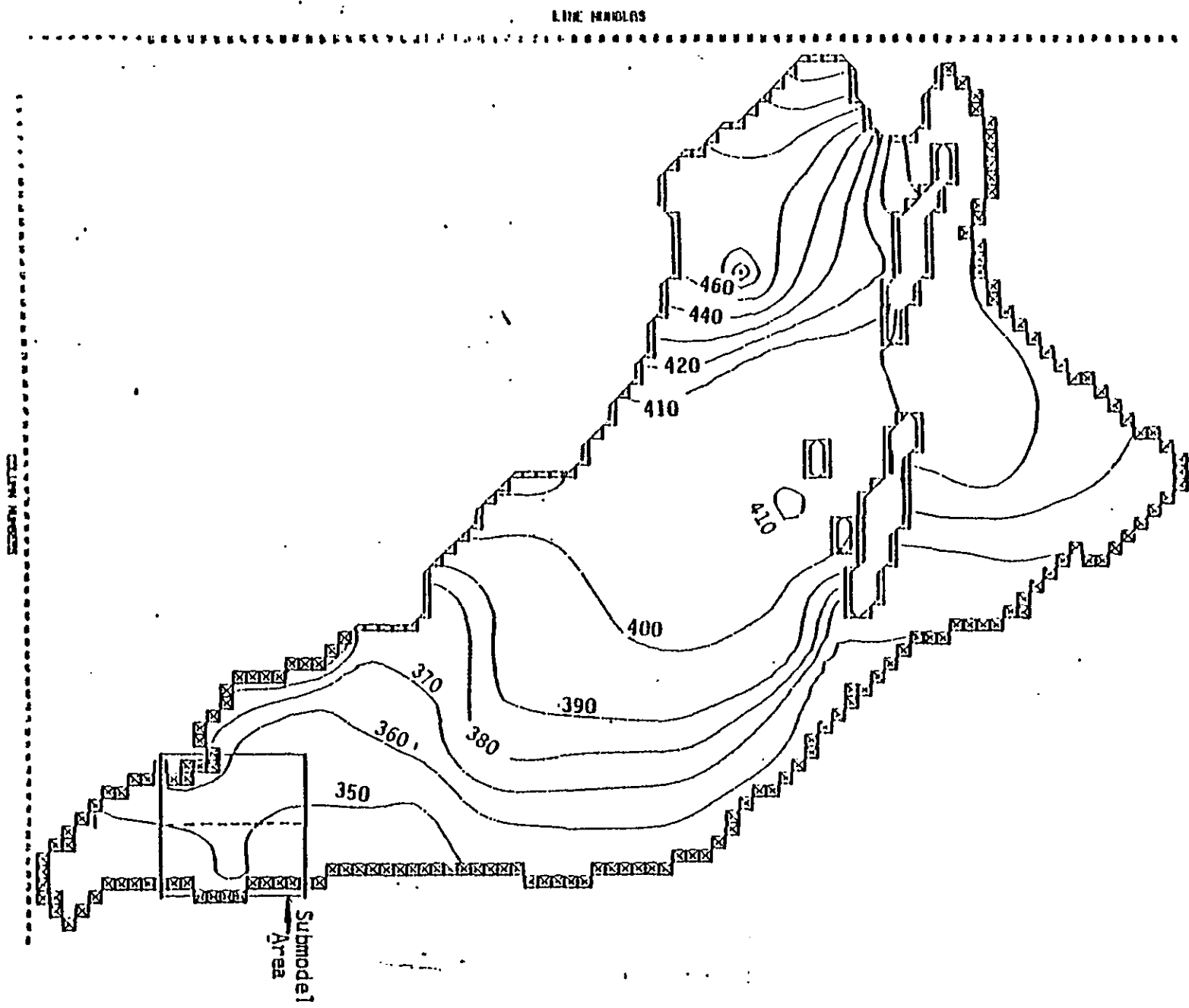


FIGURE 5. Regional Steady-State Model Solution

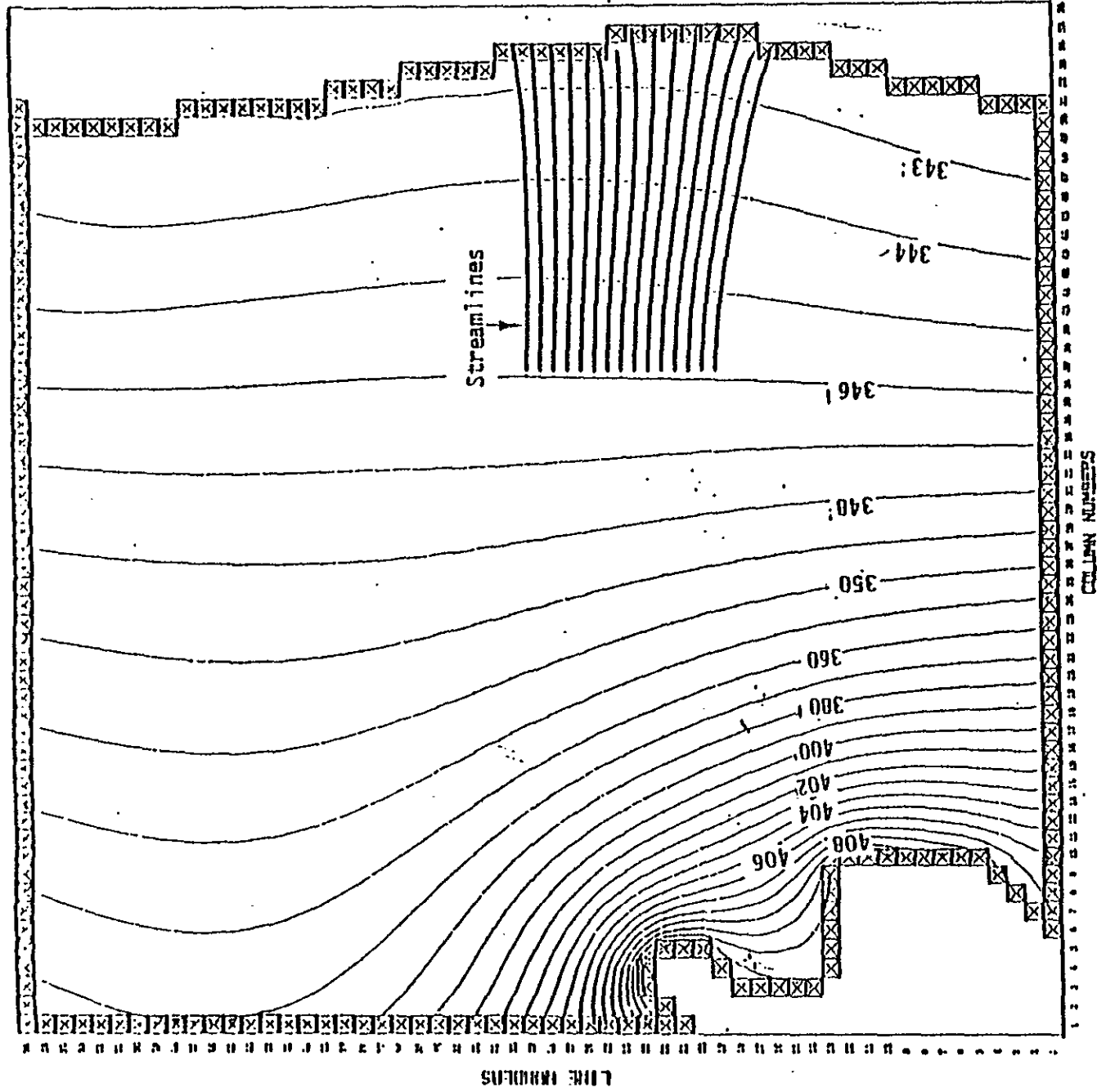
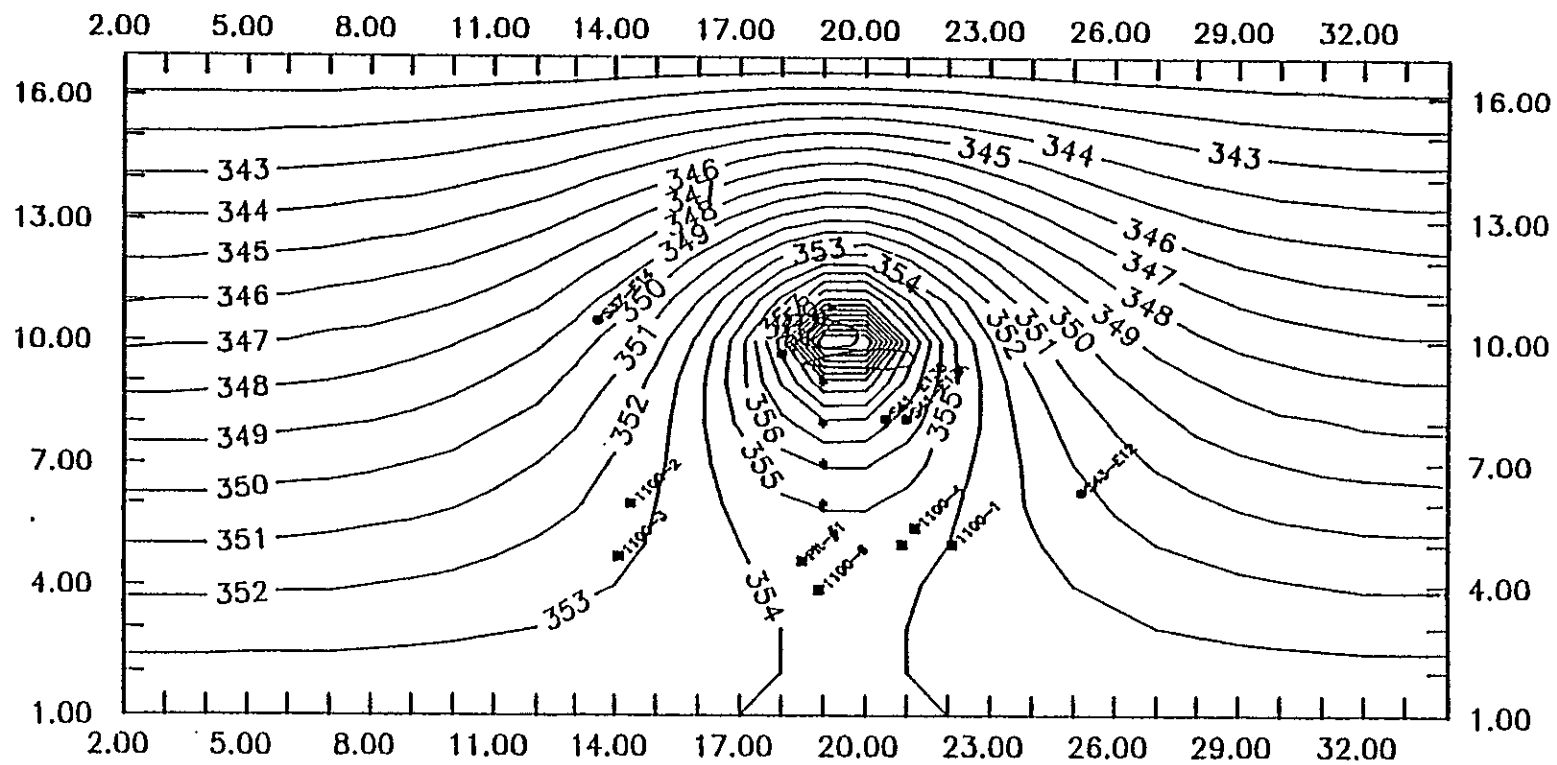


FIGURE 6. 1100 Area Steady-State Model Solution with No Recharge to the North Richland Well Field

9 0 1 1 7 7 3 0 1 1 0



90117750111

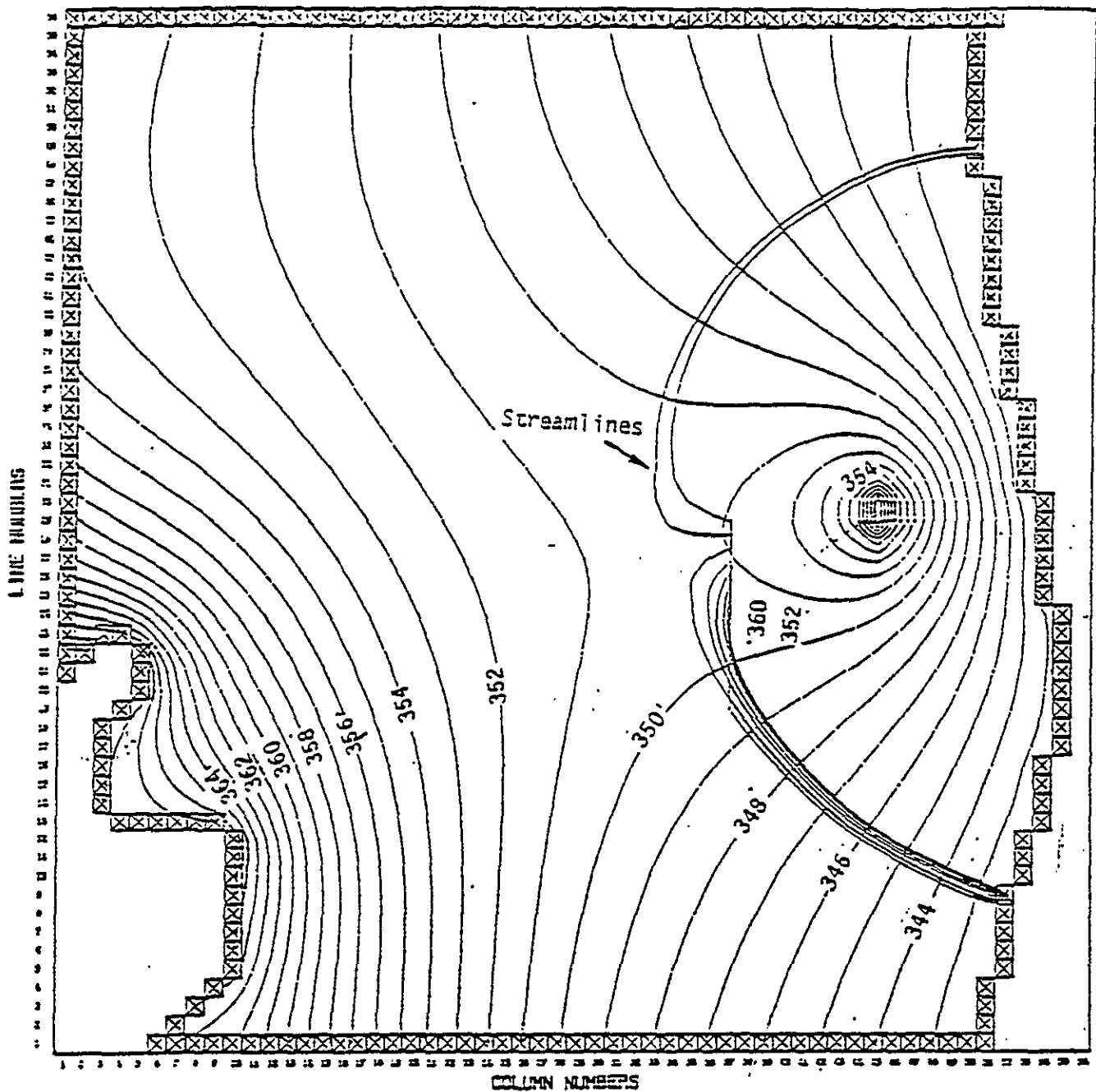


FIGURE 7. 1100 Area Steady-State Model Solution with Recharge to the North Richland Well Field

**SUMMARY OF PRELIMINARY RESULTS
IN SUPPORT OF 1100-EM-1**

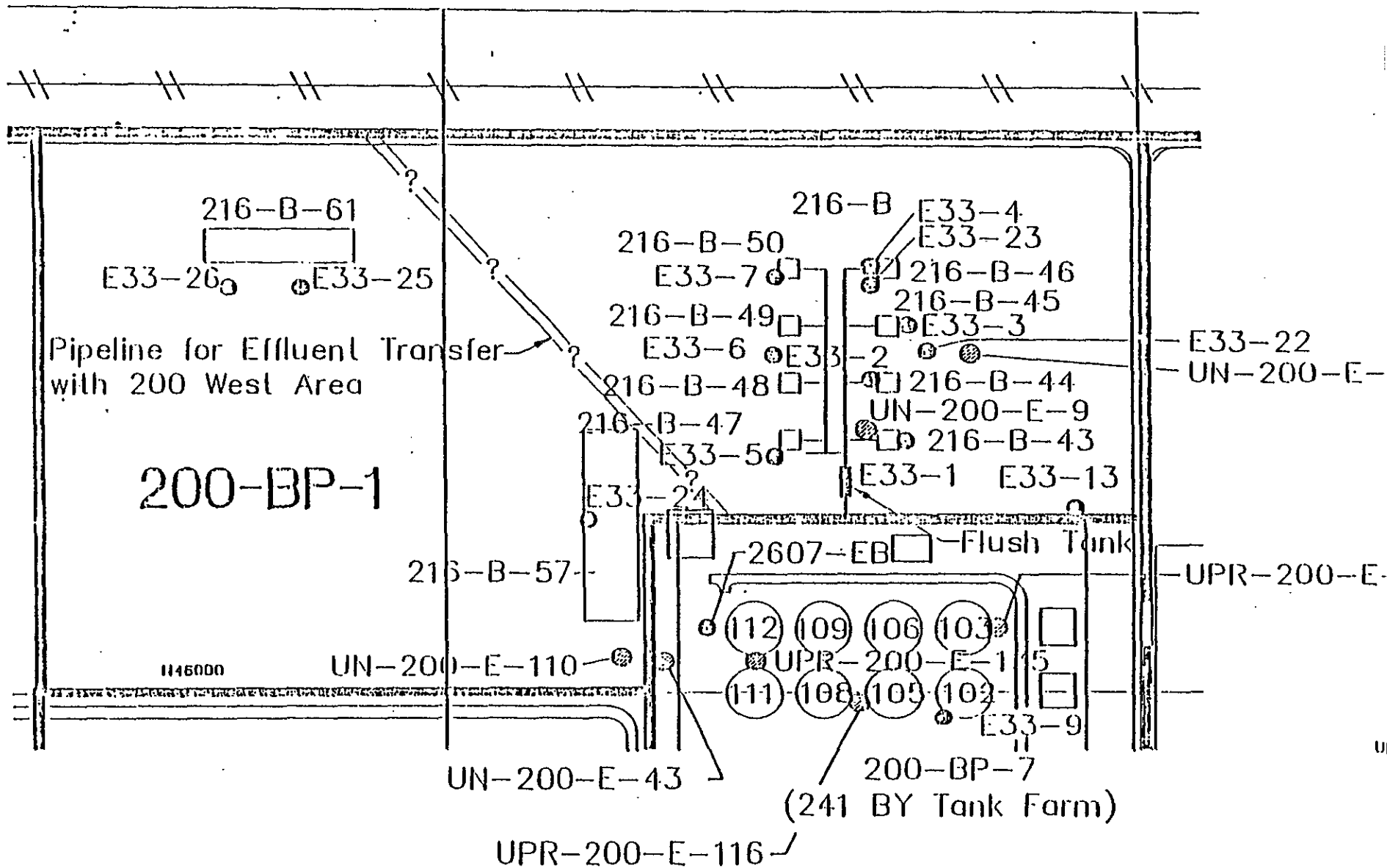
- 0 TIME OF TRAVEL THROUGH THE VADOSE ZONE IS ESTIMATED TO BE
GREATER THAN 30 YEARS**
- 0 THE POTENTIAL FOR ENTRAINMENT OF CONTAMINATION HAS BEEN
REDUCED BY OPERATION OF THE NORTH RICHLAND WELL FIELD**

9 0 1 1 7 7 6 0 1 1 3

200-BP-1 OPERABLE UNIT

LOCATED IN THE 200 AREA (200E)

- 0 NINE CRIBS**
- 0 THREE SPILLS**
- 0 ONE CRIB NEVER USED**

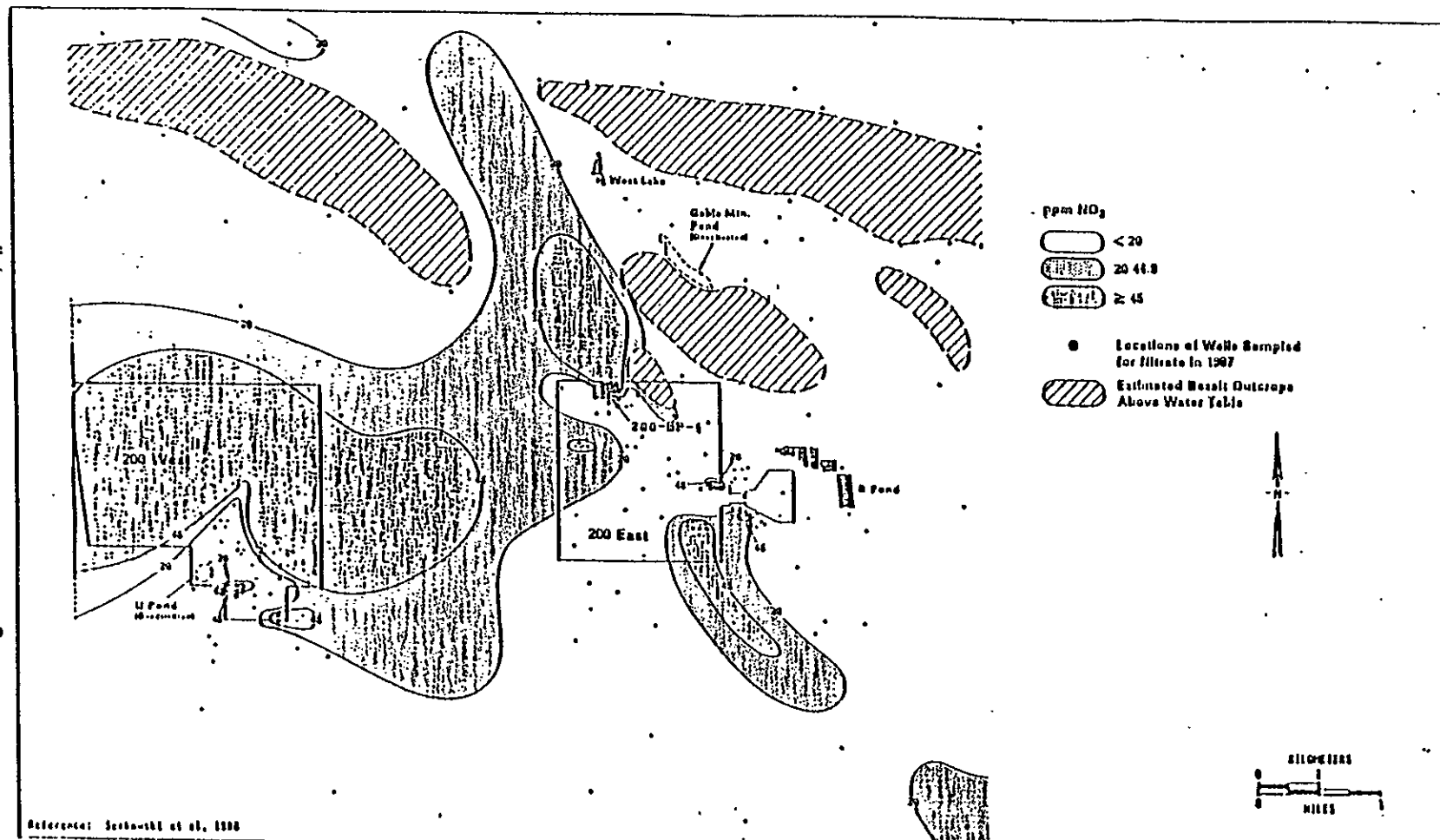




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DOE-RL 88-33 Draft



883-1328/13784

Figure 3-2. Nitrate Plumes Within the Separation Area, 1987 Data

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DOE-HL 88-33 Draft

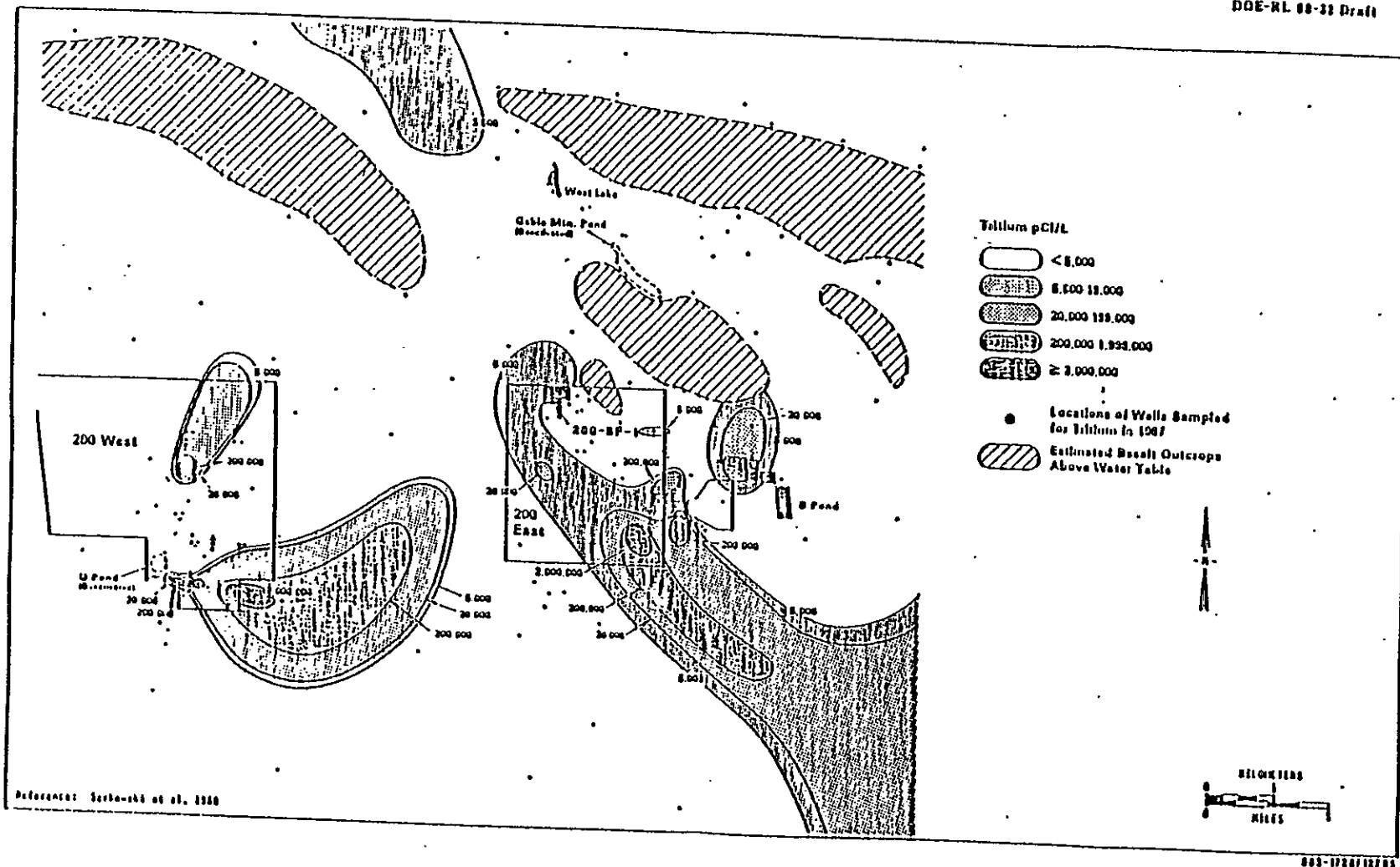
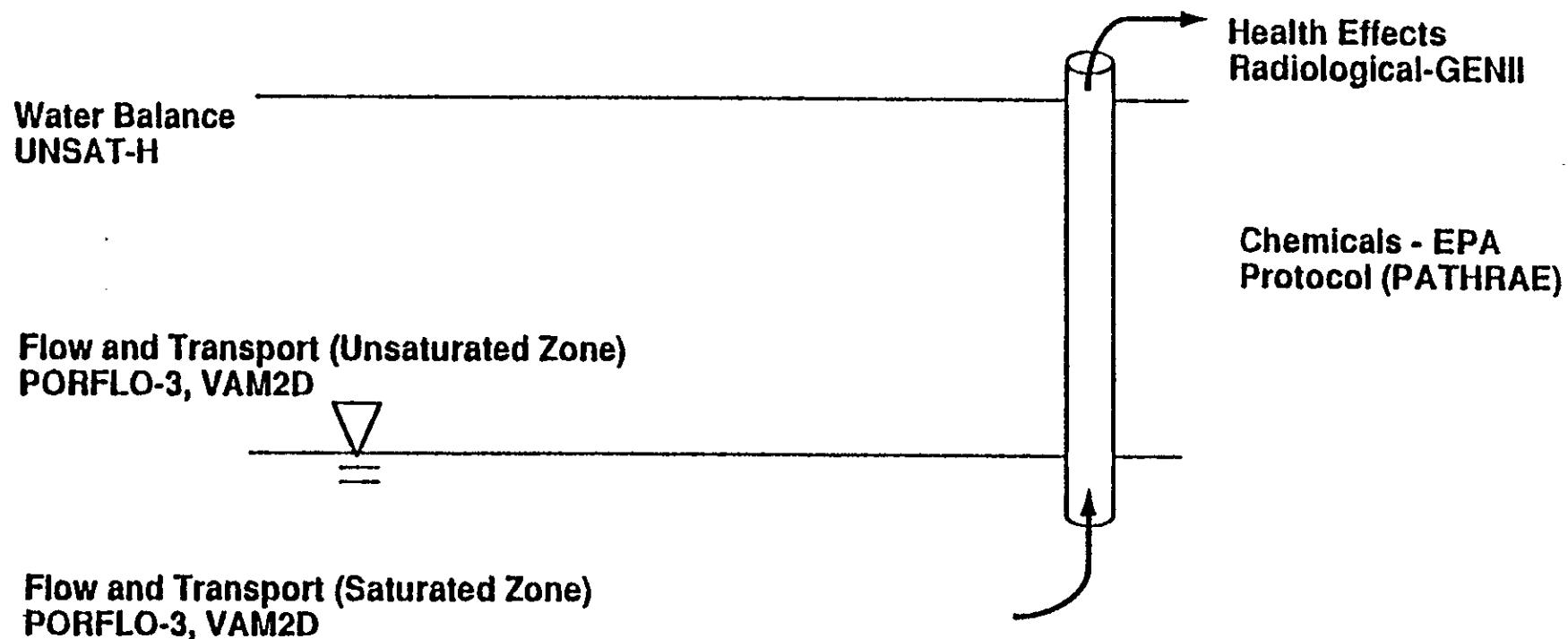


Figure 3-1. Ttllium Plumes Within the Separations Area, 1987 Data

3-11

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Suite of Models



Linking of Models



INFORMATION NEEDS

WATER BALANCE INFORMATION (UNSAT-H)

- **PRECIPITATION**
- **RUNOFF**
- **EVAPOTRANSPIRATION**
- **SOIL PROPERTIES ***
- **PLANT PROPERTIES**

*** ONLY, PARAMETER THAT WILL BE INVESTIGATED THROUGH WORK PLAN**

HEALTH EFFECTS MODELS

- **SCENARIOS AND PATHWAYS**
- **CONSTITUENT CONCENTRATIONS ***

*** MEASURED AND SIMULATED**

INFORMATION NEEDS (CONT'D.)

SATURATED AND UNSATURATED FLOW (PORFLO-3, VAM2D)

- 0 SYSTEM GEOMETRY
 - HORIZONTAL AND VERTICAL DIMENSIONS
 - STRATIGRAPHY
- 0 POROUS MEDIUM PROPERTIES
 - SPECIFIC STORAGE
 - SATURATED MOISTURE CONTENT
 - VERTICAL HYDRAULIC CONDUCTIVITY
 - HORIZONTAL HYDRAULIC CONDUCTIVITY
- 0 CONSTITUTIVE RELATIONSHIP (PARTIALLY SATURATED)
 - VAN GENUCHTEN - MUALEM FORMULATION
 - $K = F(\phi)$
- 0 INITIAL CONDITIONS AND BOUNDARY CONDITIONS

INFORMATION NEEDS (CONT'D.)

TRANSPORT (PORFLO-3, VAM2D)

- 0 SYSTEM GEOMETRY
 (SAME AS FLOW)
- 0 POROUS MEDIUM PROPERTIES
 - LONGITUDINAL DISPERSIVITY
 - TRANSVERSE DISPERSIVITY
 - APPARENT MOLECULAR DIFFUSION
 - EFFECTIVE POROSITY
 - BULK DENSITY
- 0 TRANSPORT PROPERTIES OF SOLUTE SPECIES
 - DISTRIBUTION COEFFICIENTS
 - DECAY COEFFICIENTS
- 0 INITIAL CONDITIONS AND BOUNDARY CONDITIONS
 (SAME AS FLOW)
- 0 DARCY VELOCITIES (CALCULATED FROM FLOW)

TASKS IDENTIFIED IN 200-BP-1 WORK PLAN

TASK 2 - SOURCE SAMPLING AND ANALYSIS

TASK 3 - SURFACE SOIL SAMPLING

TASK 4 - VADOSE ZONE SOIL SAMPLING AND ANALYSIS

TASK 6 - INSTALL MONITORING WELLS

TASK 7 - GROUNDWATER SAMPLING

TASK 10 - COLUMN LEACH TESTS

TASK 11 - AQUIFER TESTS

TASK 12 - SORPTIVE TESTS

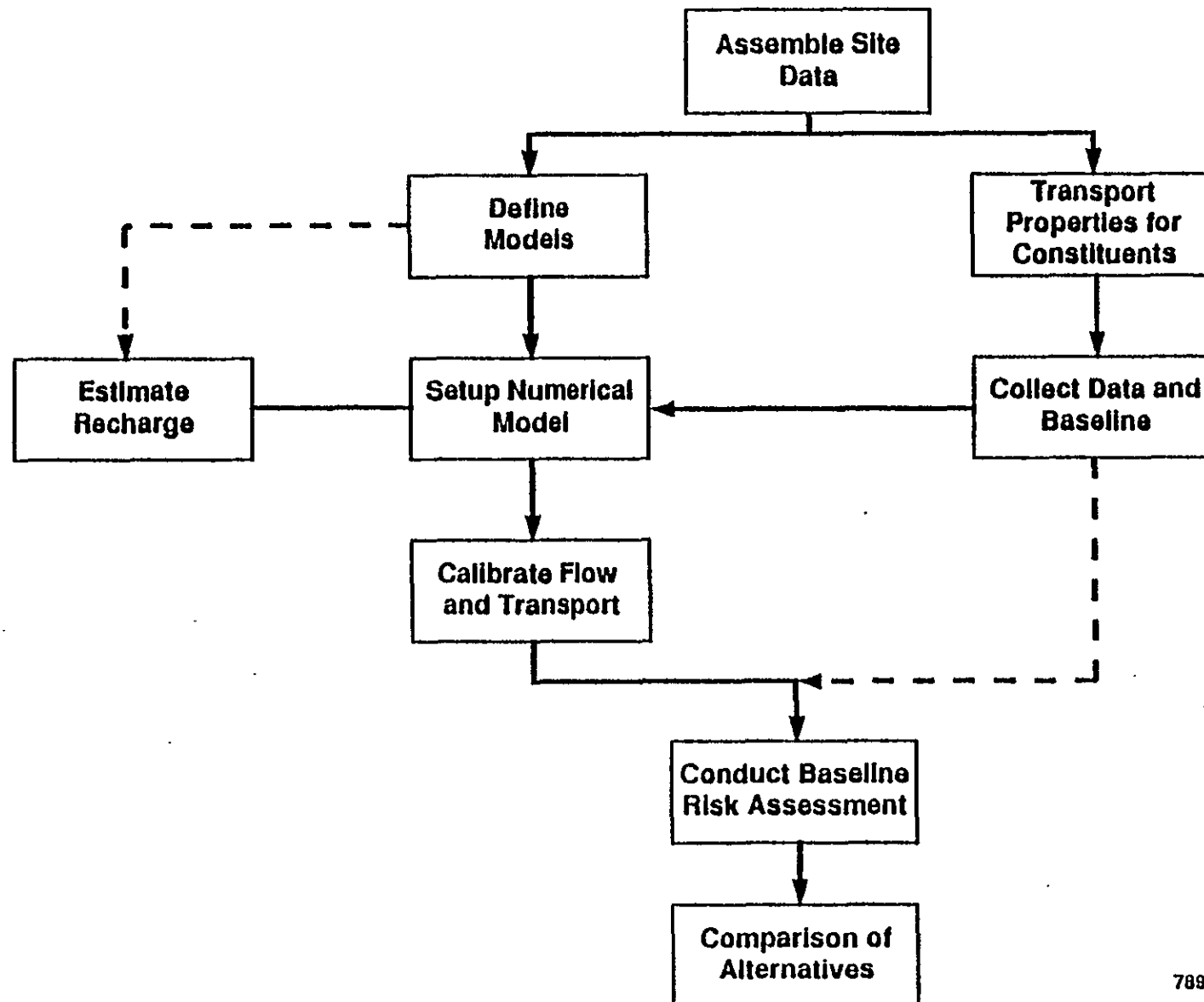
TASK 13 - BASELINE RISK ASSESSMENT

	Flow				Transport					Water Balance		Health Effects	
	Geometry	Medium Properties	Flow Properties	Initial and Boundary Conditions	Geometry	Medium Properties	Transport Properties	Darcy Velocities	Initial and Boundary Conditions	Soil Properties	Other	Calc	Other
Task 2				X					X				
Task 3										X			
Task 4	X	X	X		X	X							
Task 6		X	X			X							
Task 7				X					X				
Task 10							X						
Task 11		X											
Task 12							X	From Flow Calculations				From Other Hanford Studies	
												From Flow and Transport Calc	
												From Other Hanford Studies	

* Preliminary Conclusion: Right Data Being Collected

9 0 1 1 7 7 3 0 1 2 3

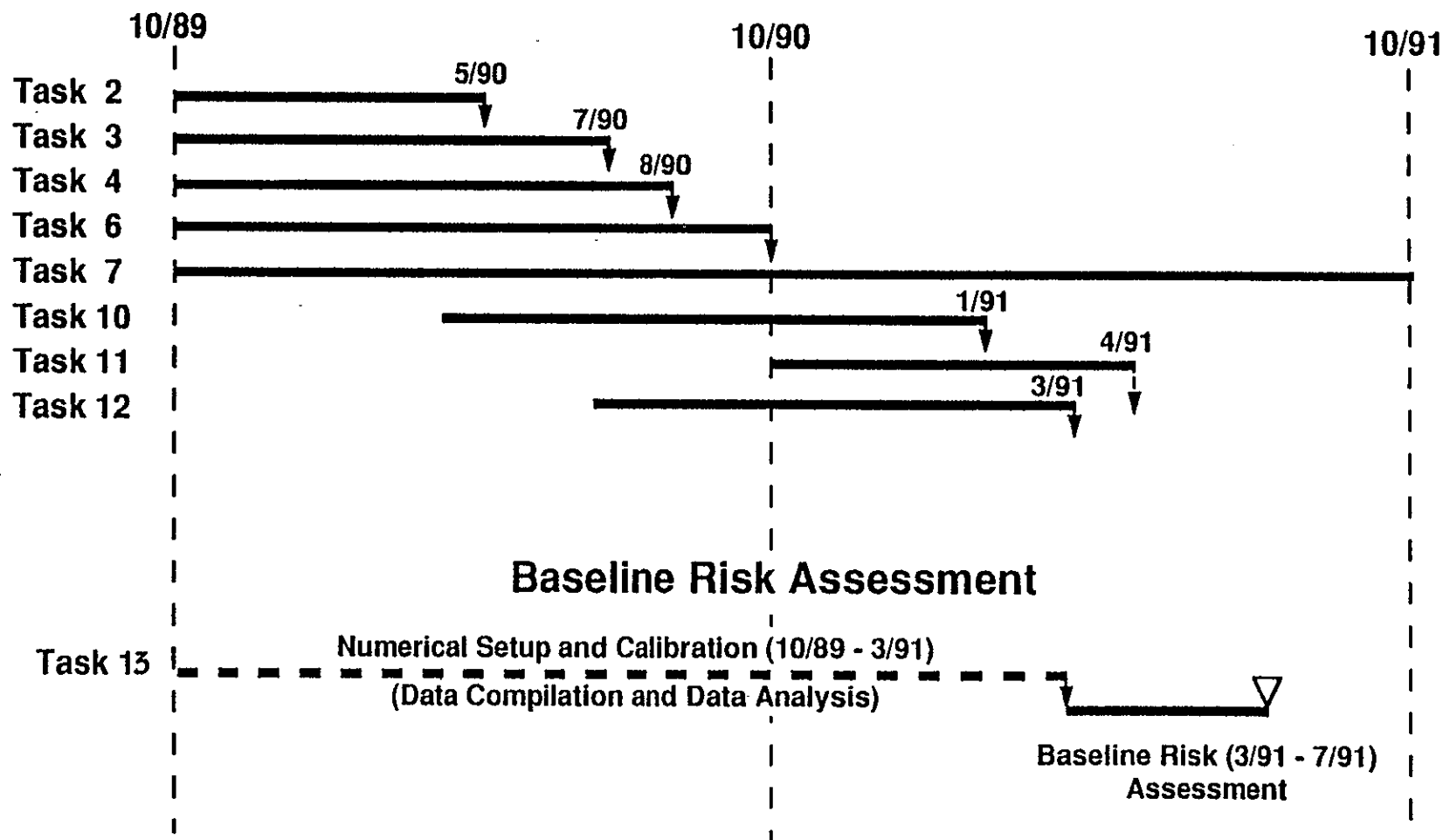
Logic to Support Baseline Risk Assessment



Comparison of Schedules

Major Activities in Support of Baseline Risk Assessment

Data Collection Tasks

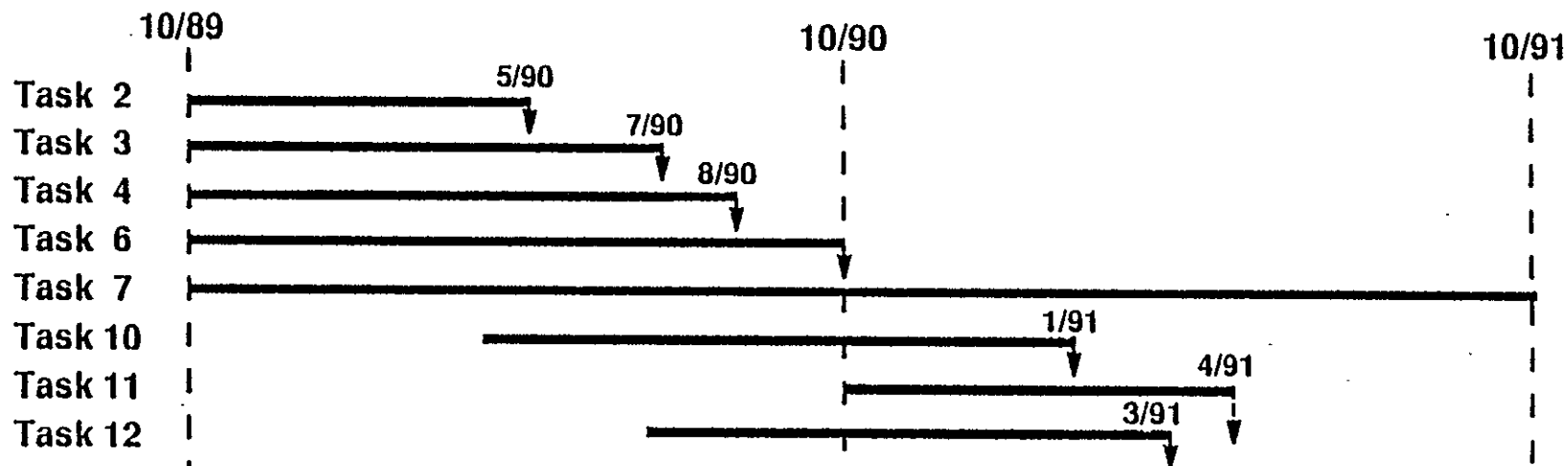


Preliminary Conclusion: The Timing of Tasks 10, 11, and 12 Appear to be the Most Critical

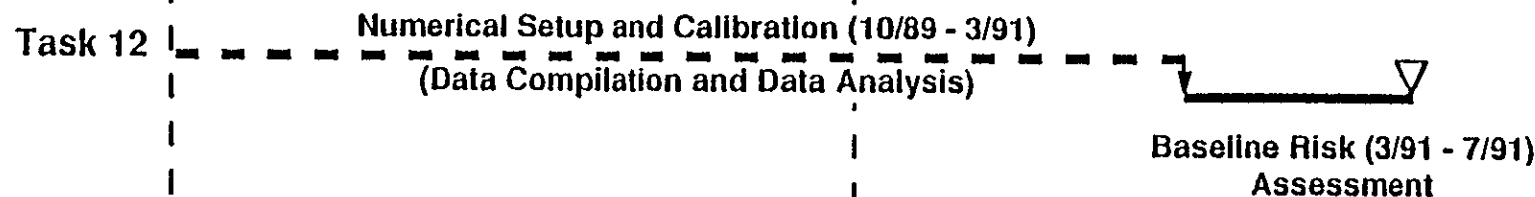
Comparison of Schedules

Major Activities in Support of Baseline Risk Assessment

Data Collection Tasks



Baseline Risk Assessment



Preliminary Conclusion: The Timing of Tasks 10, 11, and 12 Appear to be the Most Critical

PROJECTION OF DATA USED IN SUPPORT OF BASELINE RISK ASSESSMENT

- 0 **CONTAMINANT IDENTIFICATION - SOURCE TERM DEFINED BY TASKS IN
WORK PLAN**
- 0 **EXPOSURE ASSESSMENT - USE EXISTING HANFORD SITE GEOHYDROLOGY
DATABASE SUPPLEMENTED BY TASKS IN WORK PLAN**
- 0 **TOXICITY ASSESSMENT - TARGET POLLUTANTS IDENTIFIED BY TASKS
IN WORK PLAN**
- 0 **RISK CHARACTERIZATION - ASSIMILATION OF INFORMATION FROM
EXPOSURE ASSESSMENT AND TOXICITY ASSESSMENT**

SUMMARY OF PA IN SUPPORT OF 200-BP-1

- 0 APPLICATION OF FLOW AND TRANSPORT MODELS TO EVALUATE PLUME BEHAVIOR**
- 0 SCHEDULE FOR COLLECTION OF DATA WILL SATISFY MODEL SETUP, CALIBRATION, AND BASELINE RISK ASSESSMENT**



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PRESENTATION OUTLINE

- **Background - information requested**
- **Hanford resources supporting PA - historical perspective**
 - Hanford Site performance assessment program
 - barrier development program
 - historical data generated at Hanford
- **PA's role in the RI/FS process at Hanford**
- **PA activities currently supporting RI/FS at Hanford**
 - computer code evaluation/selection
 - 1100-EM-1 baseline risk assessment
 - 200-BP-1 baseline risk assessment
- **Planned PA and related activities that support the RI/FS process at Hanford**

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PLANNED PA AND RELATED ACTIVITIES

- **Continue barrier development program activities which support PA and "containment" options (feasibility studies)**
- **Continue geohydrologic characterization of Hanford Site**
 - Integrate new data from CERCLA RI's with historical data
 - extend characterization beyond OU's to support site-wide modeling (boundary/initial conditions, effluent disposal, etc.)
 - develop conceptual models of OU's and Hanford Site
 - develop data for aquifer recharge/discharge
 - refine model input parameters
- **Continue performance assessment program activities**
 - recharge estimation
 - contaminant release and transport
 - model development, benchmarking, verification, calibration, and validation

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PLANNED PA AND RELATED ACTIVITIES (CONT.)

- **Continue establishing physical properties testing facilities**
 - "cold" facility operational
 - "hot" facility requirements being defined and onsite facilities are under investigation
- **Develop Hanford-wide background program**
 - soil, water, biota for hazardous/radioactive constituents
 - physical/chemical properties of sediments
 - aquifer parameters (hydrologic, hydrochemical)
- **Focus on model parameters in later phases of RI, as needed**
- **Discussions underway with various Program Offices to establish priority of work, schedules, and funding sources**

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CURRENT "COLD" LABORATORY CAPABILITIES

- Index property tests

- moisture content
- atterberg limits
- grain size
- specific gravity
- soil classification
- capillary moisture relationship
- sand equivalent

- Density tests

- unconfined compression
- moisture-density relationship

- Strength tests

- unconfined compression
- triaxial compression

- Deformation tests

- one dimensional consolidation
- swell test

- Permeability tests (undisturbed or recompacted)

- Concrete tests

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DETAILED PRESENTATIONS

- **Detailed presentations available**
 - Thursday, October 19, 1989
 - 345 Hills Street, Room 27
 - 9:30 - 11:30 am
- **Topics include**
 - Unsaturated zone flow and transport modeling (R. Khaleel)
 - Geohydrologic characterization of the vadose zone and groundwater (A. G. Law)
- **Suggest special topic session on barrier development program activities for future meeting**

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SOIL BACKGROUND

- **BACKGROUND CHRONOLOGY**
- **ISSUES**
- **GOALS**
- **PLAN OF ACTION**
- **STATUS**
- **SUMMARY**

CHRONOLOGY SUMMARY:

- 1/88 Begin revision of Interim Status Facilities;
soil background issues begin
- 3-4/88 Soil background issues addressed in RCRA
Closure Plan submitted to Ecology
- 4/88 Initiate consideration of site-wide soil background
- 5/89 Re-evaluation of background sampling/analysis
program; Formation of WHC Technology Team
- 7/89 Background issues raised to Ecology/DOE-RL.
Ecology approval for use of professional judgement
as technical basis for selection of number of
backgroundsamples on interim basis until
development of Hanford
"policy".
- 10/89 Site-wide surface soil sampling/analysis plan
initiated
- 5/89 to
present Development of technical basis for background
"policies" ~~present~~

ISSUES:

Soil background composition are required for RCRA and CERCLA facility assessments, permitting, closure, remediation, and decommissioning activities.

- **Sampling**
- **Data Use and Interpretations**

Sampling:

- **Is there suitable background soil at the Hanford Site?**
- **Where does suitable background soil occur?**
- **What is the extent of lateral and vertical variation in "composition" of background soil?**
- **What is an appropriate number of samples?**
- **How should background soil sampling sites be selected?**

Use of Background Compositional Data

- **Methods/criteria for contamination assessment**
 - **Methodology applicable to other media**
(e.g., groundwater, concrete)
 - **Methodology applicable to both RCRA and CERCLA**
- **Remediation/clean-up standards (together with ACL's)**
- **Development of strategies and feasibility studies**
- **Risk assessment/PA**

GOALS

- **Demonstrate adequacy of Hanford soil for use as "background"**
- **Characterize background vadose zone soil composition**
 - statistical distribution
 - lateral and vertical variation
- **Develop Site-wide soil background reference composition or area-specific compositions (geologically based)**
- **Develop a technically defensible basis for the use of background data in waste management practices (i.e., applicable to different media and programs)**

PLAN OF ACTION:

- **Phased approach to resolution of sampling issues:**
 - **Develop methodologies for data use and interpretation that blend sound professional judgement and statistical methods**
-

Resolution of sampling issues

- 1- Develop geology-stratigraphy based hypotheses/models for composition Hanford vadose and saturated zones**
- 2- Test hypotheses/models**
 - **Evaluate existing compositional data on Hanford soil background**
 - **Systematic sampling and analysis program**
 - **Phase I : Surface sampling/analysis**
 - **Phase II: Follow-up sampling as required; detailed analysis of samples**

Methodology for data use / interpretation

- 1- Evaluate existing compositional data on Hanford soil background**
- 2- Obtain input from technical staff, management, and regulators**
- 3- Make decision regarding parameters and implementation methods**
- 4- Implementation of "Policy" Site-wide**
 - Short term; current milestones**
 - Long term (based on results of sampling program)**

Benefits:

- More representative data on background environment
- Increased confidence in data
- Increased confidence in technical basis for waste management practices
- Costs and schedules
- Launches vadose zone characterization efforts

Drawbacks:

- Interim measures \pm short-term approach required while site-wide sampling program is in progress
- Characterization of area-specific background will require additional effort

STATUS

Methodology Development

- ✓ 1- Evaluate existing compositional data on Hanford soil background
- ✓ 2- Obtain input from technical staff, management, and regulators
- ➔ 3- Make decision regarding methods, criteria, and implementation methods
- 4- Implementation of "Policy" Site-wide

Resolution of sampling issues

- ✓ 1- Develop geology-stratigraphy based hypotheses/models for composition Hanford vadose and saturated zones
- 2- Test hypotheses/models
- ✓
 - Evaluate existing compositional data on Hanford soil background
- ➔
 - **SYSTEMATIC SAMPLING/ANALYSIS PROGRAM**

SUMMARY

- **Considerable effort directed to background issues**
- **Development of a technically defensible basis for obtaining and using information on background**
- **Preliminary evaluations underway or completed**
- **Resolution of remaining background issues requires implementation of a systematic sampling and analysis program**
- **Site-wide or area specific background would be cost and schedule effective and technically desirable**
- **Parallel activities are required for groundwater**

IMPLEMENTATION OF SECTION 101

CONSIDERATIONS:

Normal laboratory turnaround times for CLP or CLP equivalent analysis are 40 days. This does not include any verification relative to other data collected at a site.

Many data collection activities are conducted over a period of weeks or months for a single waste site. Reporting of an incomplete data set would not be practical and would be very inefficient.

All data will need to be cleared before transmittal.

ISSUES:

What does EPA and Ecology consider to be "quality assured" data?

In what format is the data to be provided?

7 0 1 1 7 7 5 0 4 5
Attachment #7

**USE OF EXISTING WELLS
FOR GROUND WATER MONITORING**

**K. R. FECHT
WESTINGHOUSE HANFORD COMPANY
ENVIRONMENTAL DIVISION
GEOSCIENCES GROUP**

OCTOBER 18, 1989

0 1 1 7 7 5 0 1 4 5

PRESENTATION

- 0 OBJECTIVE**
- 0 INTRODUCTION**
- 0 PREVIOUS WELL ACCEPTANCE PRACTICE**
- 0 CURRENT WELL ACCEPTANCE PRACTICE**
- 0 RESULTS OF WELL ACCEPTANCE TO DATE**
- 0 SCHEDULE OF ACTIVITIES**

OBJECTIVE

**TO MAKE USE OF EXISTING DATA AND TO
PROLONG THE USEFUL LIFE OF EXISTING
WELLS THAT YIELD REPRESENTATIVE GROUND
WATER QUALITY SAMPLES.**

9 0 1 1 7 7 3 0 1 4 3

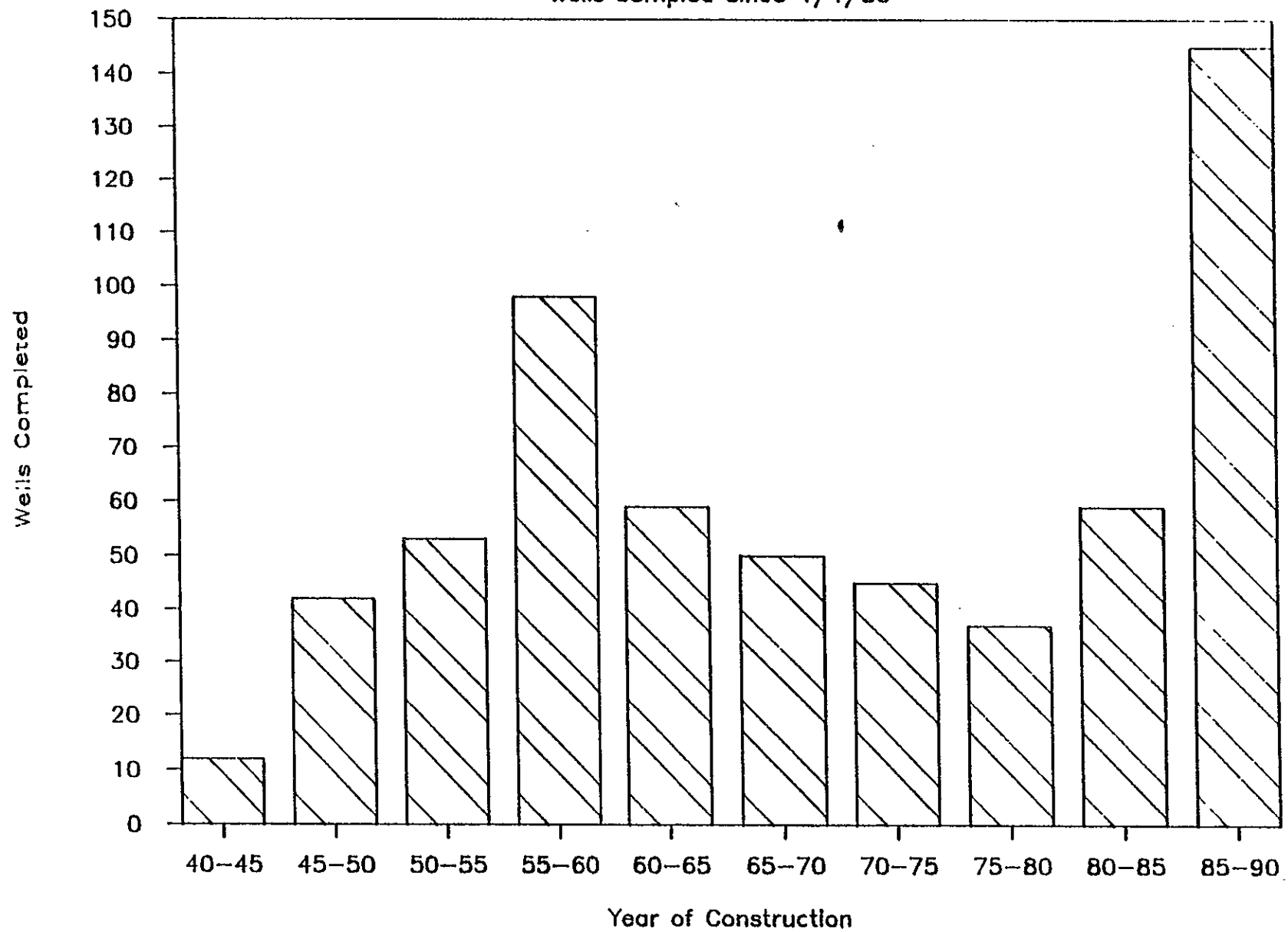
INTRODUCTION

RATIONALE

- 0 LARGE NUMBER OF EXISTING WELLS**
- 0 EXTENSIVE GROUND WATER DATA BASE
OBTAINED THROUGH USE OF WELLS**
- 0 MOST EFFICIENT USE OF EXISTING
WELLS WOULD RESULT IN MORE EFFICIENT
ALLOCATION OF AVAILABLE FUNDS**
- 0 MAXIMIZE DATA AVAILABLE FOR DECISION
IN CERCLA AND RCRA PROCESS**

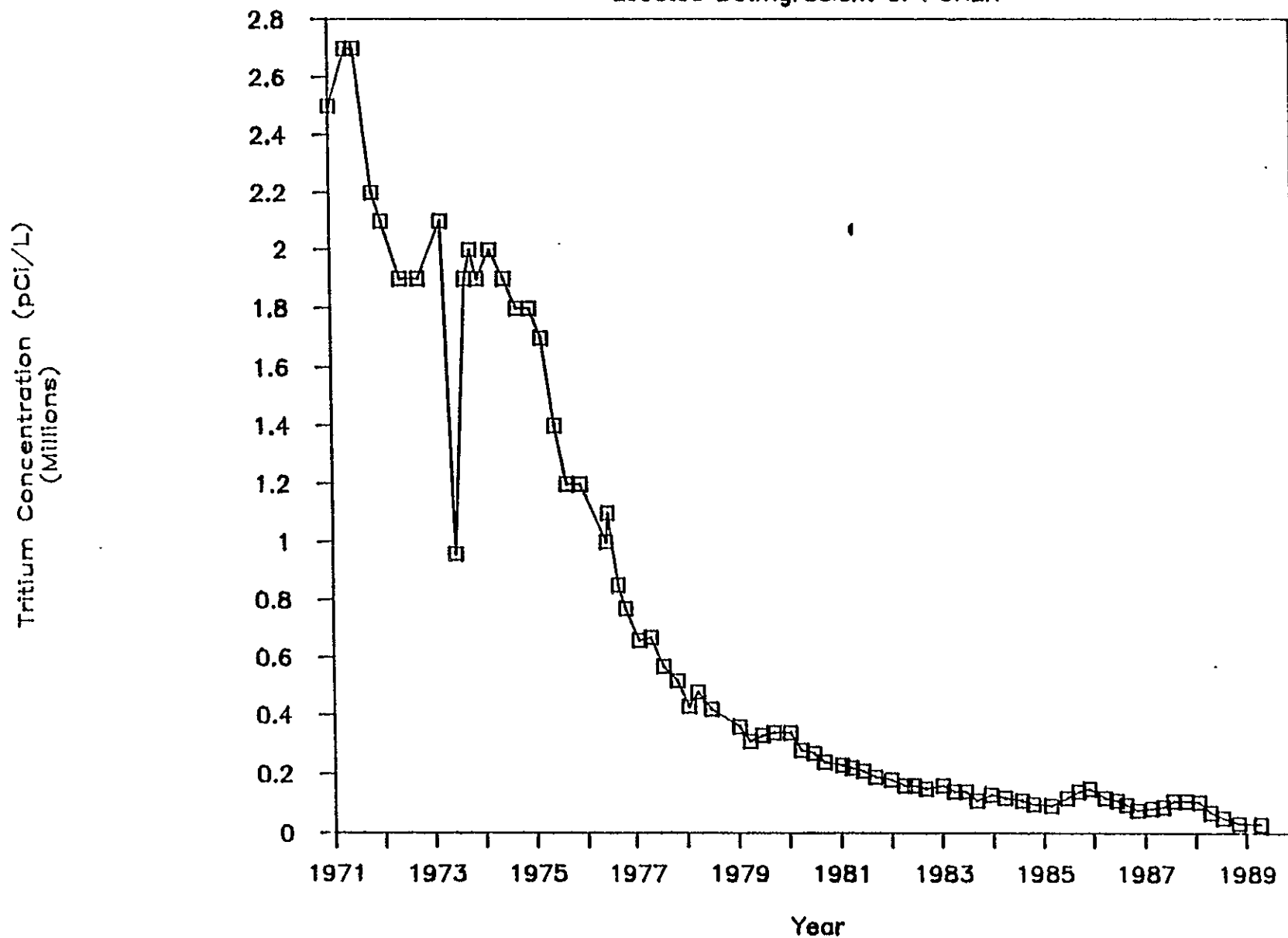
Hanford Well Construction

Wells Sampled since 1/1/80



Tritium in Well 699-34-42

Located Downgradient of PUREX



9 0 1 1 7 7 3 0 1 5 1

INTRODUCTION

PROBLEM

**A HIGH PERCENTAGE OF EXISTING WELLS WERE
NOT CONSTRUCTED TO CURRENT EPA/ECOLOGY
STANDARDS.**

INTRODUCTION

SOLUTION

**ONGOING EVALUATION OF EXISTING WELLS FOR
CONFORMANCE TO EPA/ECOLOGY DATA QUALITY
OBJECTIVES FOR GROUND WATER.**

PREVIOUS WELL ACCEPTANCE PRACTICE

**WELLS INCORPORATED INTO HANFORD GROUND
WATER MONITORING NETWORK (RCRA AND
OPERATIONAL) IF THEY WERE NEEDED AND MET
REQUIREMENTS OF 40 CFR 265.91(c)**

9 0 1 1 7 7 5 0 1 5 4

40 CFR 265.91(c)

- 0 WELLS MUST BE CASED IN MANNER THAT MAINTAINS INTEGRITY OF BOREHOLE**
- 0 WELLS MUST BE SCREENED OR PERFORATED, AND PACKED WITH SAND OR GRAVEL WHERE NECESSARY**
- 0 WELLS MUST SAMPLE APPROPRIATE INTERVAL**
- 0 THE ANNULAR SPACE ABOVE THE SAMPLING DEPTH MUST BE SEALED WITH A SUITABLE MATERIAL**

WATER-QUALITY MONITORING

WATER LEVELS

PROJECT	1	2	3	4	Reject	Qualitative	Total Wells	New Wells	Old Wells	Inter-mediate
	Total Wells	New Wells	Old Wells I	Old Wells II						
300 Area	20	13	7		1		49	13	36	
200 LLBG	35	35					35	35		
1301-N	8	3	5		2		44	8	36	
1324-N	5	4	1							
1325-N	11	1	10		6					
183-H	23	18	2	3			34	18	16	
216-A-10	8	6	2				9	6	2	1
216-A-29	5	3		2			6	3	1	2
216-A-36B	7	5	2		2	1	9	5	2	2
216-B-3	7	6		1	3		10	6	3	1
2101-M	4	4			2		4	4		
Grout	5	4		1		8	13	5	3	5
SWL	6	6				1	7	6	1	
NRDWL	6	6					5	5		

1

Number of detection/indicator evaluation wells

2

Well meets current RCRA specifications

3

Well constructed using perforated carbon steel casing

4

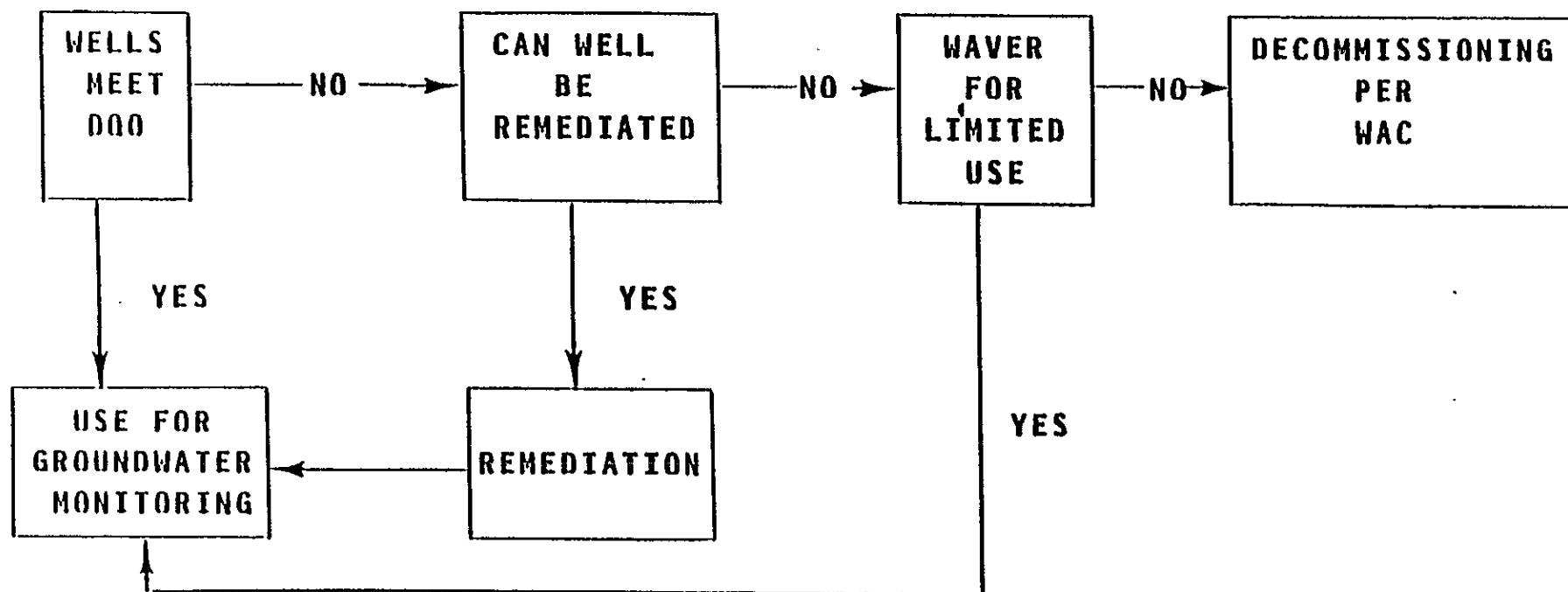
Well constructed with carbon steel casing and telescoped stainless steel screen

CURRENT WELL ACCEPTANCE PRACTICE

- 0 EXISTENCE OF WELL RECORDS**
- 0 PHYSICAL CONDITION OF WELL**
- 0 IMPACT ON HYDROCHEMISTRY**
- 0 REMEDIATION ACTIVITIES**

5 0 1 1 7 7 3 0 1 3 7

GROUNDWATER WELL FITNESS-FOR-USE CHARACTERIZATION AND EVALUATION



7 0 1 7 7 5 0 1 5 1

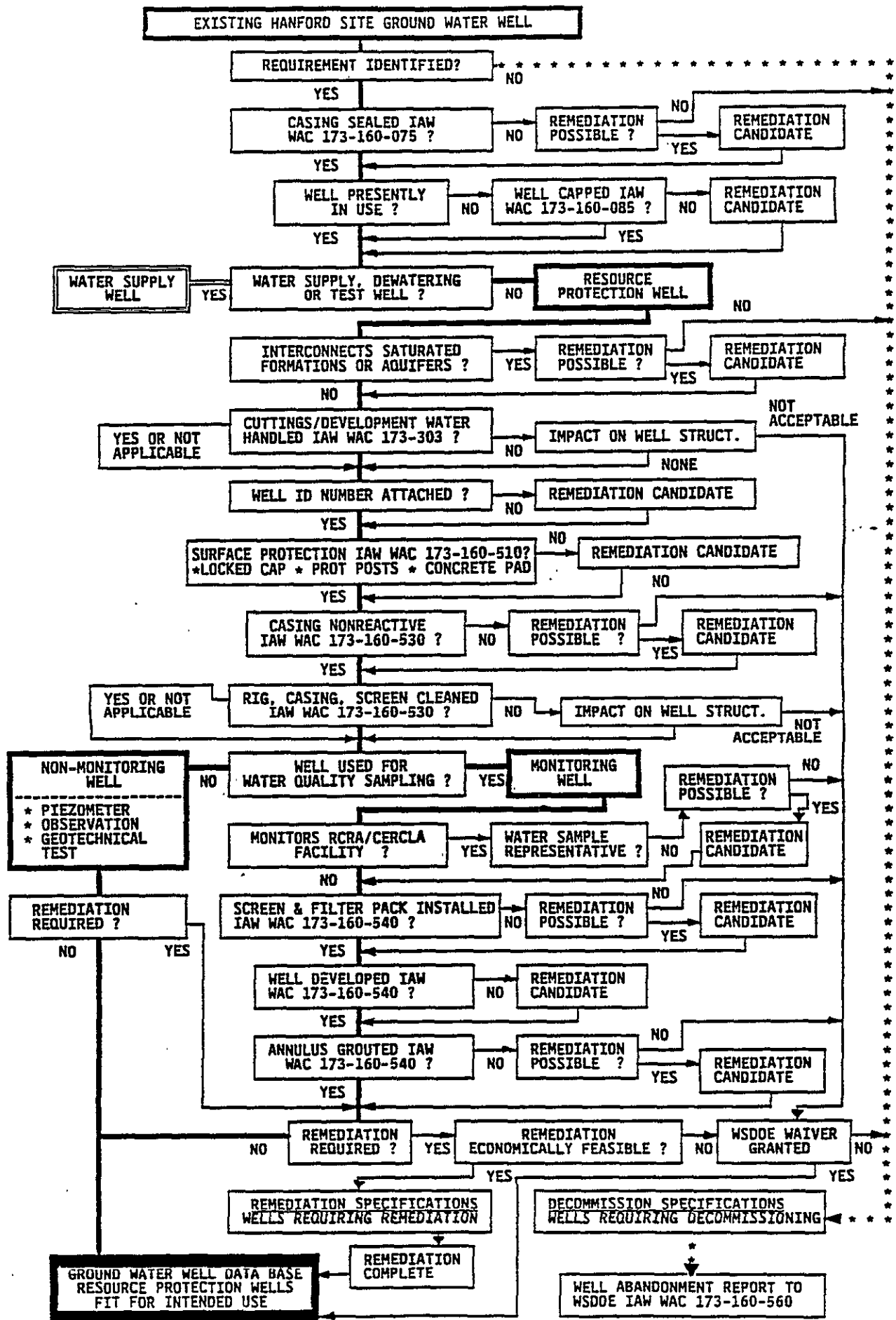
REPRESENTATIVE SAMPLES

- 0 PATHWAY UNCERTAINTIES EXIST FOR BOTH OLD AND
NEW WELLS**
- 0 TREND ANALYSIS OF HYDROCHEMISTRY IN TIME AND
SPACE**
- 0 CROSS-COMPARISON BETWEEN OLD AND NEW WELLS**

9 0 1 7 7 5 0 5 9

WELL ACCEPTANCE STATUS

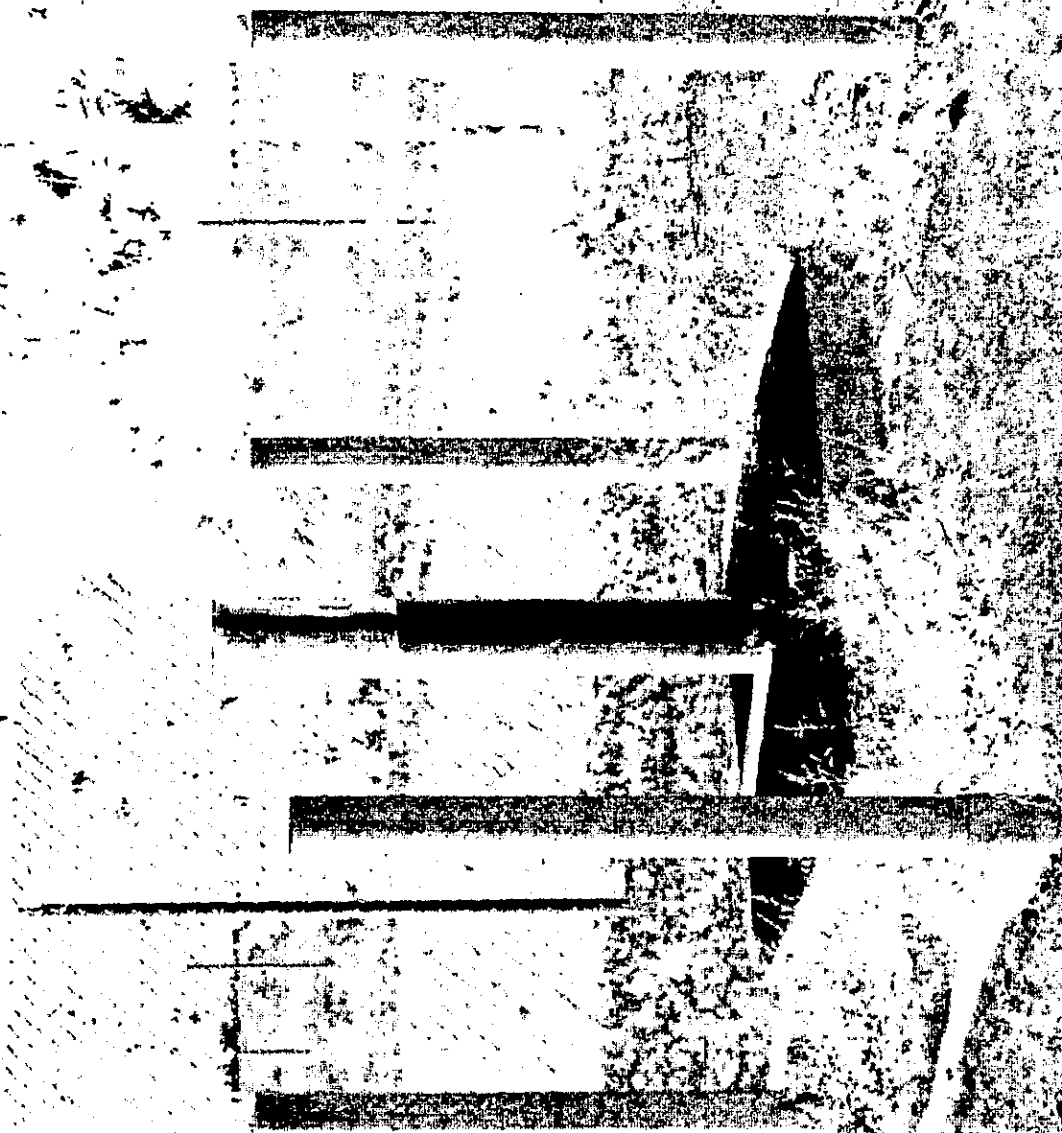
- 0 PROCEDURE EII 6.6**
- 0 COMPILATION AND EVALUATION OF WELL
RECORDS**
- 0 SURFACE EXAMINATION**
- 0 BOREHOLE TV CAMERA SURVEYS**



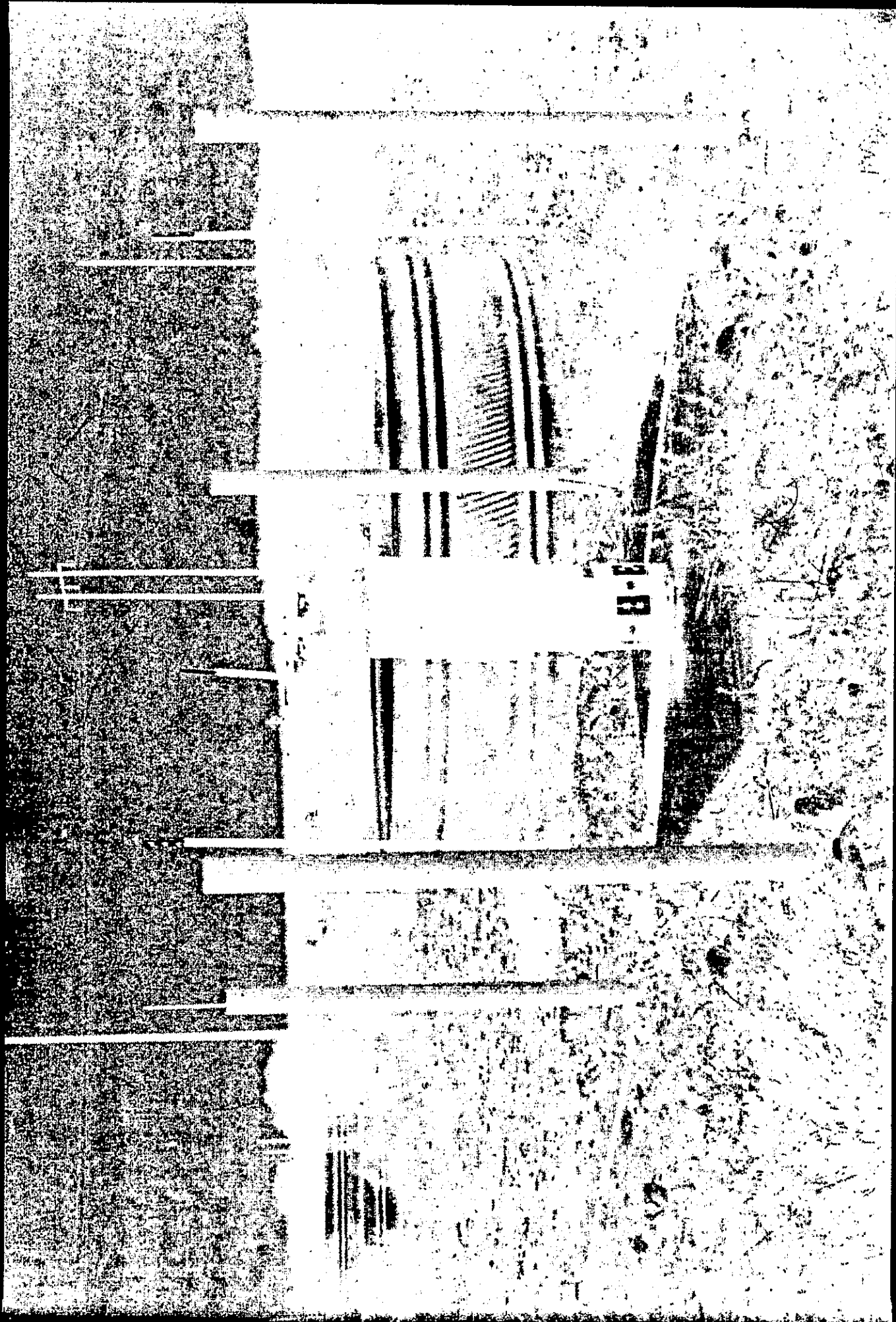
RKL 6/22/89

NOTE: IAW = IN ACCORDANCE WITH

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RESULTS OF WELL ACCEPTANCE ACTIVITIES

- 0 COMPILATION AND EVALUATION OF WELL REPORTS**
- 0 SURFACE EXAMINATION**
- 0 BOREHOLE EXAMINATION**
- 0 COMPARISON OF PAIRED WELLS**
- 0 COMPARISON OF PUMP TYPES**

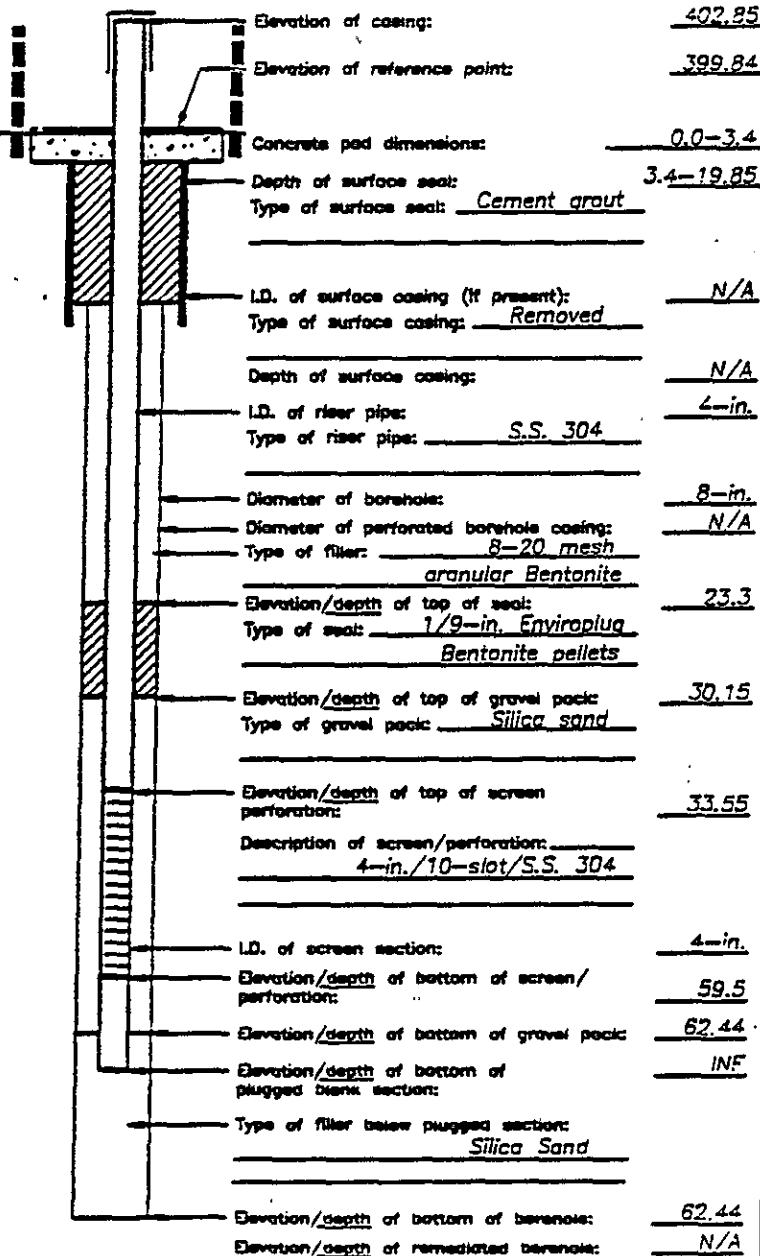
WELL CONSTRUCTION AND COMPLETION SUMMARY AS-BUILT

Drilling Method: <u>Cable Tool</u>	Sewage Method: <u>Open Pit</u>	WELL NUMBER: <u>699-S40-F14</u> TEMPORARY WELL NO.: <u>2</u>
Drilling Fluid Used: <u>Water</u>	Additives Used: _____	Hamford Coordinates: N/S <u>S39745</u> E/W <u>E13927</u>
Driller's Name: <u>Lin Gordon</u>	WA State Lic. No.: <u>1517</u>	State Coordinates: N <u>J65592.8</u> E <u>2309354.0</u>
Drilling Company: <u>Kaiser Eng</u>	Company Location: <u>Hamford</u>	Start Card #: _____ T _____ R _____ S _____
Date Started: <u>10/3/88</u>	Date Complete: <u>11/3/88</u>	Elevation Ground Surface (ft): <u>399.84 (Brass Cap)</u>

Depth to water: 44.43
 Data source: Geologist's log

GENERALIZED STRATIGRAPHY

0-5: SILTY SANDY GRAVEL
 5-10: SILTY SANDY GRAVEL
 10-15: SILTY SANDY GRAVEL
 15-20: SILTY SANDY GRAVEL
 20-25: SLIGHTLY SANDY GRAVEL
 25-30: SLIGHTLY SANDY GRAVEL
 30-35: GRAVELLY SAND
 35-40: GRAVELLY SAND
 40-45: SILTY SANDY GRAVEL
 45-50: SLIGHTLY SILTY SANDY GRAVEL
 Ringold Contact @ 52'
 50-55: SLIGHTLY SILTY GRAVELLY SAND
 55-60: SILTY SAND
 60-62.44: SILTY SAND



NOTES: N/A: Not Applicable
 INF: Insufficient Data

WELL CONSTRUCTION AND COMPLETION SUMMARY AS-BUILT

Drilling Method: <u>Cable Tool</u>	Sample Method: <u>INF</u>	WELL NUMBER: <u>199-F5-4</u>
Drilling Fluid Used: <u>INF</u>	Additives Used: <u>INF</u>	TEMPORARY WELL NO.: <u>108-F-1</u>
Driller's Name: <u>Gentz</u>	WA State Lic. No.: <u>INF</u>	Hamford Coordinates: N/S <u>N 79069</u> E/W <u>W 30650</u>
Drilling Company: <u>INF</u>	Company Location: <u>INF</u>	State Coordinates: N <u>INF</u> E <u>INF</u>
Date Started: <u>02/11/53</u>	Date Complete: <u>02/18/53</u>	Start Card #: <u>INF</u> T <u> </u> R <u> </u> S <u> </u>
		Elevation Ground Surface (ft): <u>INF</u>

Depth to water: 35.0

GENERALIZED STRATIGRAPHY

Data source: Driller's Log

0 - 10: 75% COARSE GRAVEL, 25% SILT
 10 - 15: 50% SAND and SILT, 50% GRAVEL
 15 - 20: 75% PEA GRAVEL, 25% SAND and SILT
 20 - 25: Pure SAND
 25 - 35: COARSE GRAVEL 1" up to 3"
 35 - 49: 50% GRAVEL, 50% SAND
 49 - 50: CLAY and SAND
 50 - 62: Gray CLAY and CALICHE
 62 - 70: Pure CLAY
 70 - 72: CLAY, SAND and GRAVEL
 72 - 75: CLAY and SAND
 75 - 90: CLAY
 90 - 92: CLAY, little SAND and SILT
 92 - 95: RINGOLD formation and CLAY
 95 - 103: RINGOLD 5% GRAVEL
 103 - 115: CLAY and SILT

Elevation of casing:	412.12
Elevation of reference point:	INF
Concrete pad dimensions:	INF
Depth of surface seal:	INF
Type of surface seal:	<u>None</u> <u>documented</u>
I.D. of surface casing (if present):	N/A
Type of surface casing:	N/A
Depth of surface casing:	N/A
I.D. of riser pipe:	8-in.
Type of riser pipe:	INF
Diameter of borehole:	8-in.
Elevation/depth of top of screen/perforated interval:	35.0
Description of screen/perforation:	<u>Perforated 65-105' (2/18/53)</u> <u>and 35-65' (6/18/74)</u> <u>4 cuts per foot.</u>
I.D. of screen section:	N/A
Elevation/depth of bottom of screen/perforated interval:	105.0
Elevation/depth of top of plugged section:	N/A
Type of filler used in plugged section:	<u>Set Cement plug to 80'.</u> <u>Sand Sloughing</u>
Elevation/depth of bottom of borehole:	115.0
Elevation/depth of remediated borehole:	80.0

NOTES: N/A: Not Applicable
 INF: Insufficient Data

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WELL CONSTRUCTION AND COMPLETION SUMMARY AS-BUILT

Drilling Method: <u>Cable Tool</u>	Sample Method: <u>INF</u>	WELL NUMBER: <u>299-W18-3</u>
Drilling Fluid Used: <u>Water</u>	Additives Used: <u>INF</u>	TEMPORARY WELL NO.: <u>N/A</u>
Driller's Name: <u>Rach, Osborn</u>	WA State Lic. No.: <u>INF</u>	Hanford Coordinates: N/S <u>N39600</u> E/W <u>W77700</u>
Drilling Company: <u>INF</u>	Company Location: <u>INF</u>	State Coordinates: N <u>INF</u> E <u>INF</u>
Date Started: <u>11/11/58</u>	Date Complete: <u>1/15/59</u>	Start Cord #: <u>INF</u> T <u>—</u> R <u>—</u> S <u>—</u>
		Elevation Ground Surface (ft): <u>INF</u>

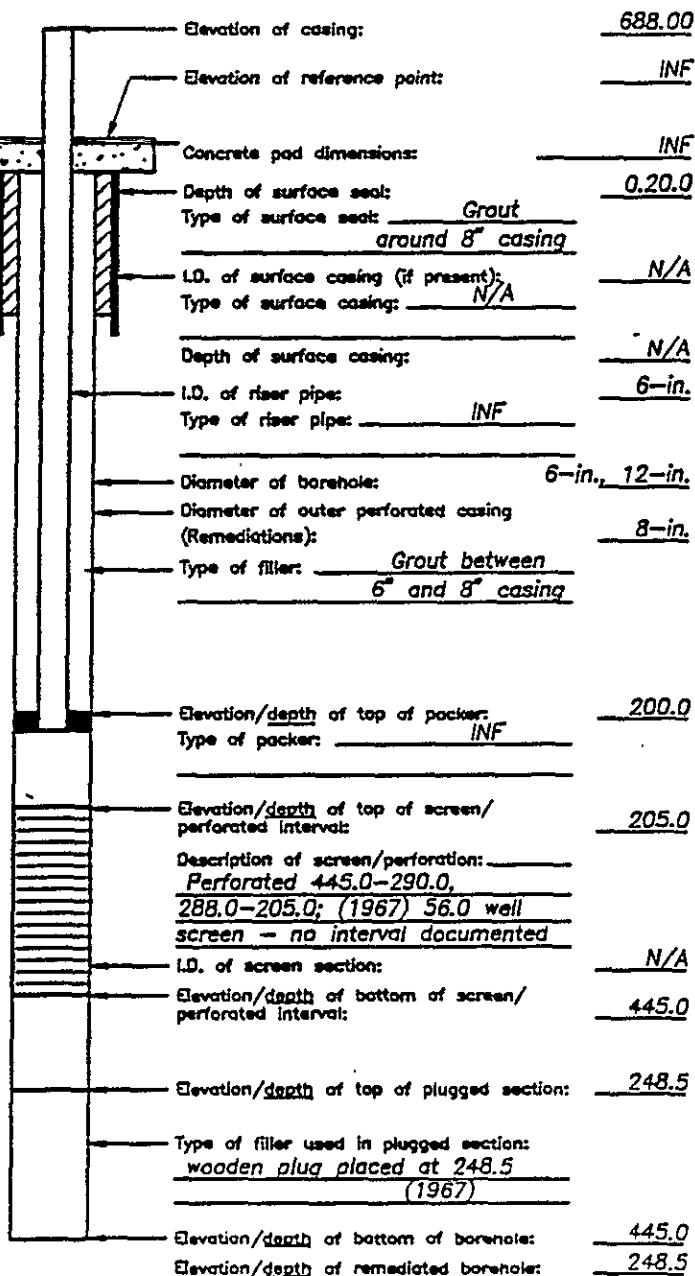
Depth to water: 220'

GENERALIZED STRATIGRAPHY

Data source: Driller's log

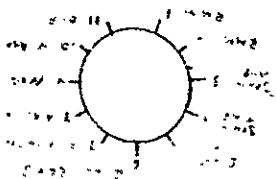
0 - 10: SAND
 10 - 20: SAND, GRAVEL
 20 - 30: SAND, ROCK
 30 - 34: SAND
 34 - 39: COBBLE, SAND
 39 - 55: SAND
 55 - 77: SILT, SAND
 77 - 106: SAND, GRAVEL
 106 - 129: SAND & SILT
 129 - 131: SAND
 131 - 137: SAND & SILT
 137 - 140: CLAY & SAND
 140 - 150: SAND, SILT
 150 - 152: SAND, SILT & COBBLES
 152 - 155: CLAY, SILT
 155 - 159: COBBLE, CLAY, SILT
 159 - 180: SAND, SILT
 180 - 223: SAND & COBBLE
 223 - 236: SAND, GRAVEL
 236 - 265: COBBLE & SAND
 265 - 305: SAND, SILT & GRAVEL
 305 - 315: No documentation
 315 - 330: SAND, SILT & COBBLE
 330 - 335: SAND
 335 - 375: SAND, SILT & COBBLE
 375 - 380: ROCK, SAND & CLAY
 380 - 385: ROCK
 385 - 400: CLAY, SAND & GRAVEL
 400 - 405: SAND & GRAVEL
 405 - 410: SAND
 410 - 415: SAND & GRAVEL
 415 - 420: SAND, GRAVEL & COBBLE
 420 - 425: SAND, SILT & CLAY
 425 - 426: CLAY & SAND
 426 - 445: SAND & GRAVEL with ROCK

NOTES: N/A: Not Applicable
 INF: Insufficient Data



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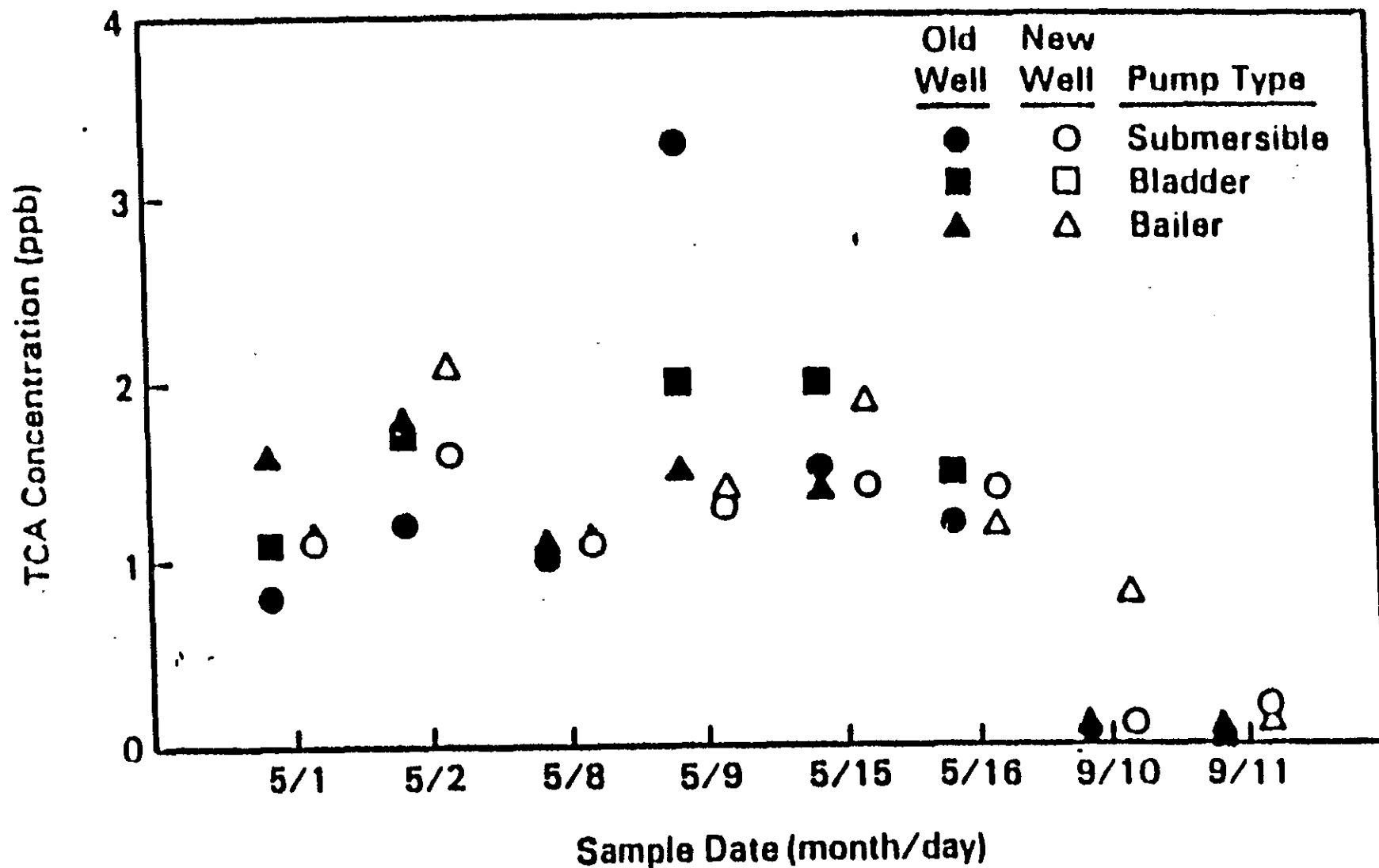


FIGURE 7a. Mean TCA Concentrations as a Function of Sample Date

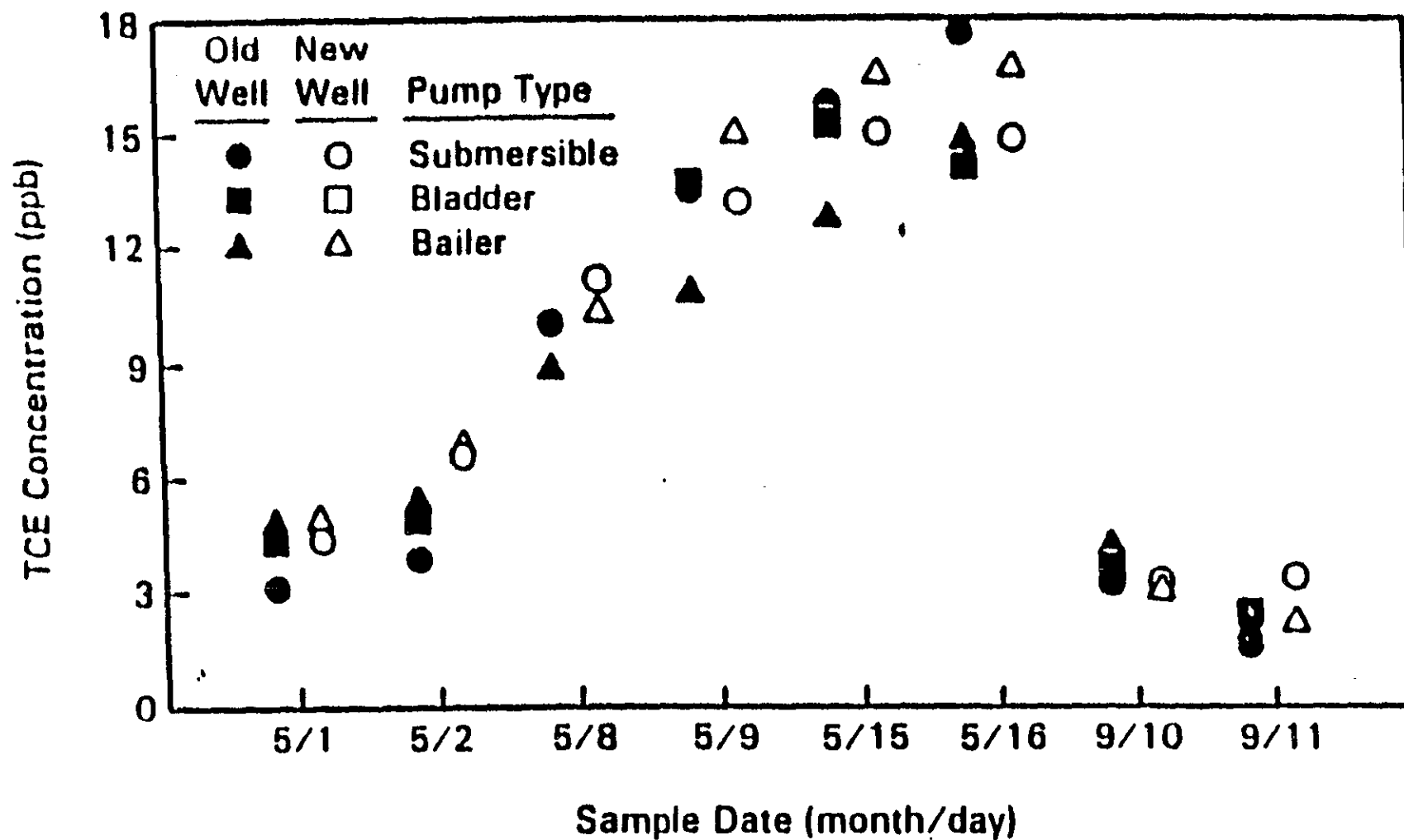
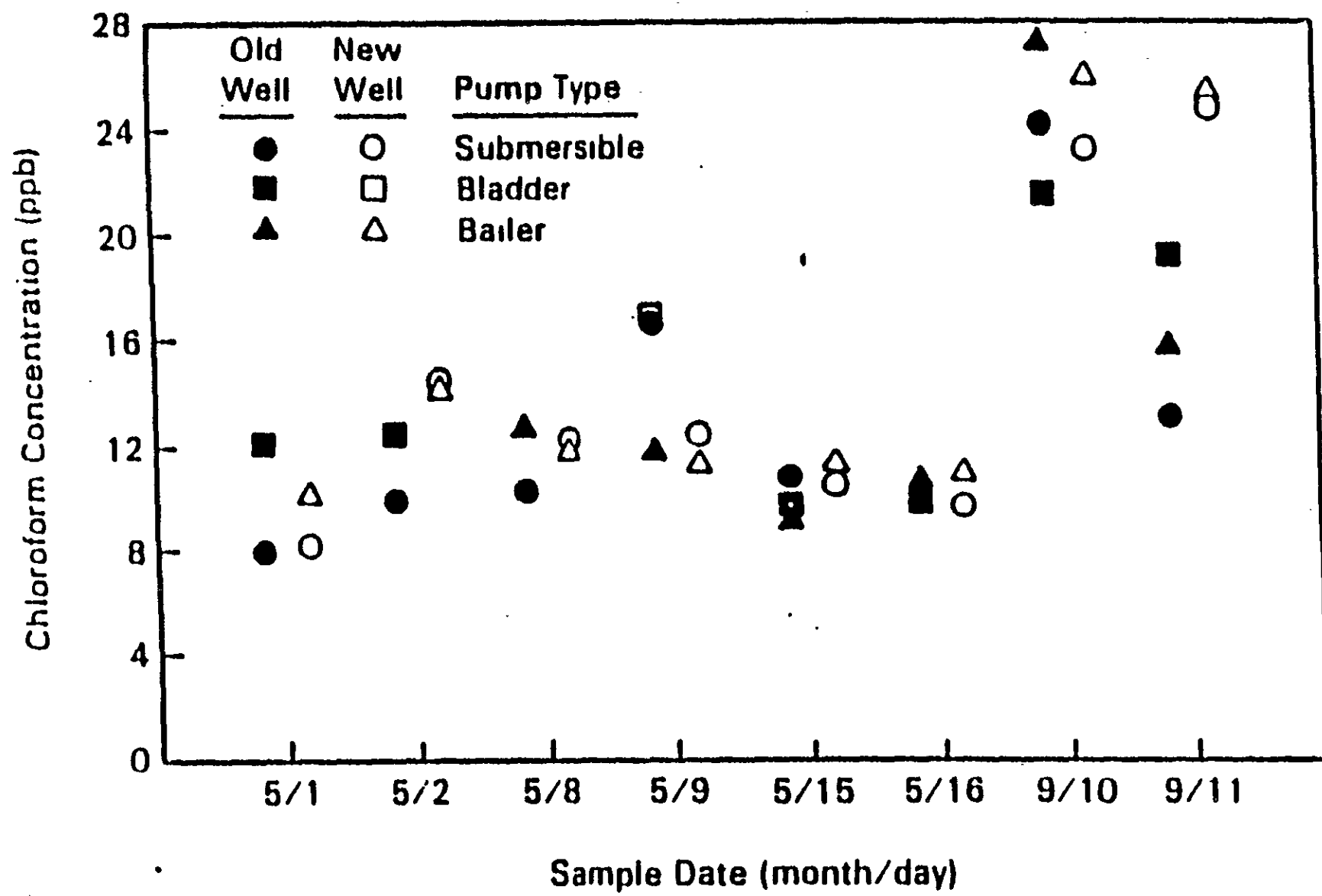
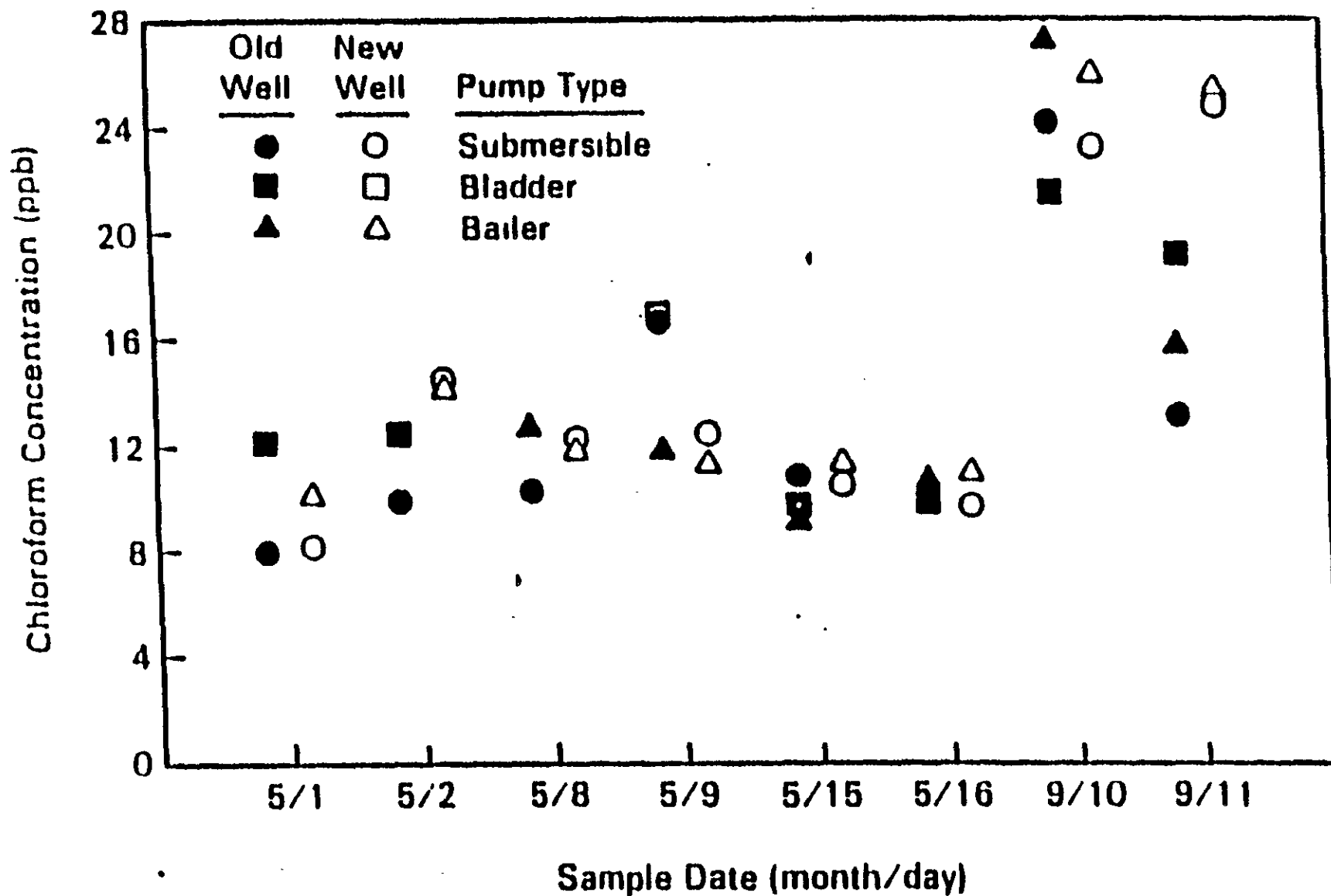


FIGURE 8a. Mean TCE Concentrations as a Function of Sample Date



MEAN CHLOROFORM CONCENTRATIONS AS A FUNCTION OF SAMPLE DATA



MEAN CHLOROFORM CONCENTRATIONS AS A FUNCTION OF SAMPLE DATA

SCHEDULE OF ACTIVITIES**FY1990 FUNDING**

12/1/89	RECORDS CHECK COMPLETED FOR 700 WELLS (INCLUDING 200-BP-1)	FUNDED
2/1/90	PRELIMINARY EVALUATION OF HYDROCHEMISTRY OF EXISTING WELLS COMPLETED	IDENTIFYING FUNDING
13/1/90	REPORT REQUIRED REMEDIAL ACTIONS TO DOE	IDENTIFYING FUNDING

ONGOING ACTIVITIES (BY SITE OR STUDY)

-	SURFACE EXAMINATION	FUNDED
-	BOREHOLE TV EXAMINATION	PARTIALLY FUNDED
-	EVALUATION OF HYDRO- CHEMISTRY DATA	FUNDED

Attachment #8

Action Items from Past Special Topics Meetings

Special Topic: Drilling at Hanford
2750 E Building, Room B-103, Richland, Washington
June 1, 1989

EPA and Ecology requested that they be supplied with the proposed criteria and evaluation for accepting existing wells to meet CERCLA and RCRA ground water monitoring requirements.

Action # ST1.1: K.R. Fecht (WHC) will supply criteria to K.M. Thompson for submittal by July 21, 1989

K.M. Thompson (DOE) will supply criteria to EPA and Ecology by July 31, 1989

K.R. Fecht (WHC) will provide an evaluation to K.M. Thompson by December 29, 1989

K.M. Thompson (DOE) will provide the evaluation to EPA and Ecology by January 12, 1990.

Status: Closed. All items have been submitted to EPA/Ecology as of the 10/89 UM Meetings.

EPA and Ecology requested copies of applicable DOE Orders which control drilling activities at Hanford.

Action # ST1.2: K.M. Thompson (DOE) will supply copies of the applicable Orders by June 30, 1989

Status: Closed. Transmitted by letter dated 6/21/89.

EPA and Ecology requested copies of the article rating various drilling methods at hazardous waste sites.

Action # ST1.3: H.D. Downey (WHC) provided copies of the articles during the meeting.

Status: Closed

EPA and Ecology requested notification prior to initiation of the Becker drilling and containment system test.

Action # ST1.4: K.M. Thompson will notify.

Status: Open. Test has not yet started.

Ecology requested copies of two recent articles regarding the Becker drilling method.

Action # ST1.5: D.R. Myers (WHC) transmitted the articles on June 5, 1989.

Status: Closed

EPA and Ecology requested that they be supplied with the report documenting the results of the Becker drilling and containment system test.

Action # ST1.6: W.H. Price (WHC) will supply a copy of the report for EPA and Ecology's on-site review. After clearance, copies of the report will be provided.

Status: Open. Test not yet started.

Special Topic: Quality Assurance

July 21, 1989, Room 340, Federal Building, Richland, Washington

Action Item # ST2.1: Bob Stewart will coordinate the preparation of a letter from DOE requiring the contractors to clear documents supporting the Tri-Party Agreement.

Status: Open. Work in progress. Clearance issue is being worked by a WHC committee.

Action Item # ST2.2: WHC (Rick Wojtasek) is to evaluate the possibility of generating Hanford site-wide quality requirements for environmental restoration activities.

Status: Open. Work in progress. Effort to date has led to agreements on data quality strategy.

Action Item # ST2.3: Four SDs will be sent to EPA/Ecology as examples per an action item (# 3FF1.2) from the last 300-FF-1 Unit Managers Meeting. Bob Stewart will investigate whether these have also been cleared for public release.

Status: Closed. (SDs changed to MRs). Documents have been transmitted.

Action Item # ST2.4: EPA (Mike Schlender) will send DOE (C.K. Kasch) a copy of the QA Program Plan for Region X.

Status: Closed.

Action Item # ST2.5: EPA (Mike Schlender) will inform DOE (C.K. Kasch) of course availability in DQOs.

Status: Open

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Special Topic: Tri-Party Agreement Implementing
Procedures Focusing on EII Manual
August 15, 1989, Room G-53, Federal Building, Richland, Washington

Action # ST3.1: Bob Stewart will investigate whether the clearance process can be streamlined should the EII manual become a DOE manual.

Status: Open. Work in progress.

Action # ST3.2: WHC is to add EPA/Ecology to the controlled distribution of EII manuals as follows:

- Three copies to EPA (one each to Paul Day, Ward Staubitz, and Emily Pimentel)
- Three copies to Ecology, all to be sent to Roger Stanley.

Status: Closed

Action # ST3.3: WHC will produce a list of procedures judged to be "affecting quality of data." EPA will produce a similar list. Both lists will be discussed at the time of the next UM meeting or PM meeting before agreeing on a final list.

Status: Open

Action # ST3.4: At the September UM meetings, WHC is to highlight what procedures will be needed for the 200-BP-1 OU before work can begin.

Status: Open

- Action # ST3.5:
1. WHC will formally document the disposition responses agreed to at the August 15 special topics meeting. The documented responses will be available within two weeks.
 2. WHC will incorporate the EPA/Ecology comments into the next revision to the EIIs due by the end of November, 1989. [Note: It is anticipated that comments will be addressed within revisions to individual procedures before this date].

Status: Open

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Special Topic: Analytical Data Quality
Federal Building, Room G-59, Richland Washington
October 13, 1989

Action # ST4.1: WHC will revise the strategy document to incorporate EPA's stated QA requirements. The strategy document will be issued as a Miscellaneous Report (MR) until a permanent status is decided. Action: Wayne Johnson, WHC
Status: Open

Action # ST4.2: EPA will provide additional guidance references on data review for methods other than CLP. Action: Mike Schlender
Status: Open

Action # ST4.3: EPA will provide direction as to specific changes needed to the 300-FF-1 Work Plan at a meeting to be held October 16, immediately following this special topics meeting. Action: Mike Schlender, EPA.
Status: Closed.

Action # ST4.4: EPA will formally transmit to DOE by letter the analytical performance criteria discussed at this meeting and the specific changes required to the 300-FF-1 Work Plan (per Action ST4.3 above). Action: Paul Day/Mike Schlender, EPA
Status: Open

Action # ST4.5: WHC will revise the 300-FF-1 Work Plan to incorporate the changes discussed at this meeting and at the subsequent meeting per Action # ST4.3. Work Plan revisions are to be completed by November 16, 1989. Action: Wayne Johnson, WHC
Status: Open